ISSUE 196 MARCH 2010

Better Homes and Gardens®

# WOOD®

The World's Leading Woodworking Resource

BEAT BLOTCHY STAIN! p.26

Make simple doors and drawers using only your tablesaw! p.41

## Easy-to-Build Pine Cabinet p.38

## More Great Projects

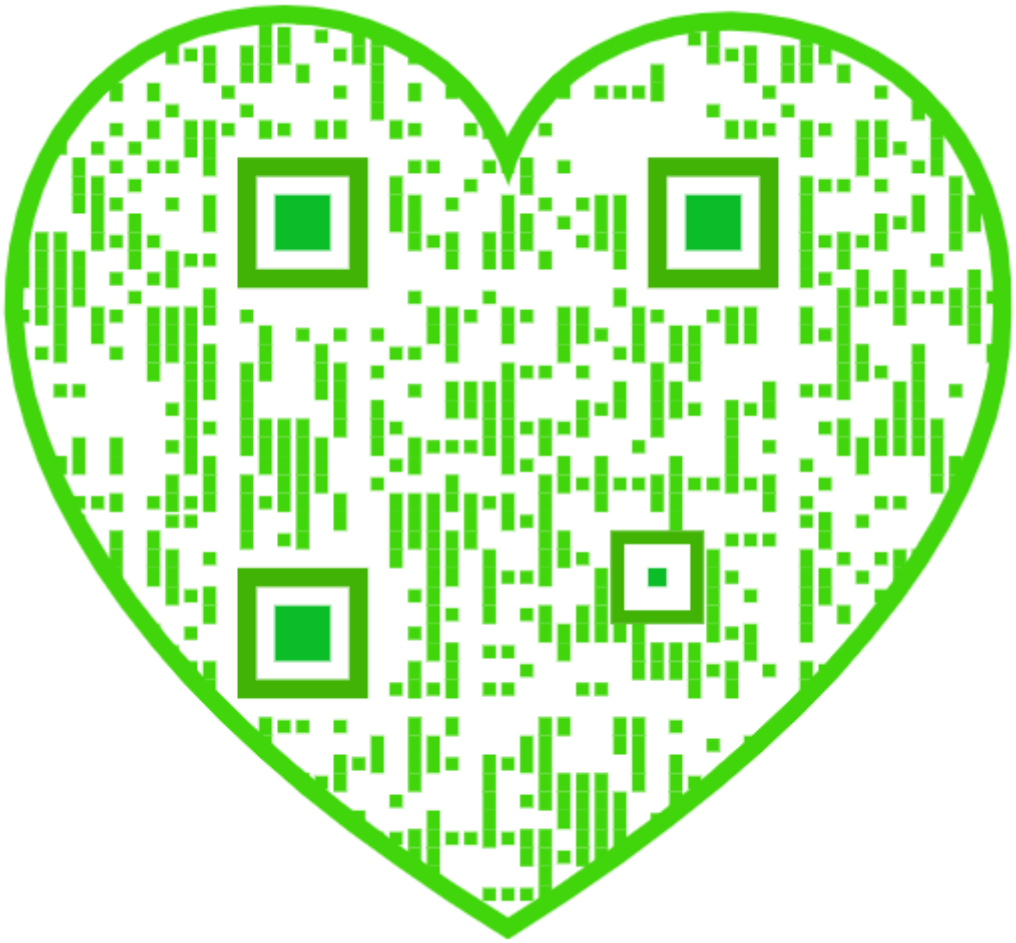
- Wall-hung Mirror p.32
- Shop Assembly Table p.68
- Chisel Rack p.18

## Toxin-free Alternative to Treated Lumber p.20

33 Shop Tips INSIDE

## SHOP TEST: Benchtop Planers p.56

## Make Over Your Kitchen Cabinets and Save Big Bucks! p.62



# Grizzly Industrial®

Purveyors of Fine Machinery®, Since 1983

## 10" Cabinet Table Saws with Riving Knife

- Motor: 3 HP, 220V, single-phase
- Table size with extension: G0690 -27" x 40", G0691 - 27" x 74¾"
- Blade tilt: left • Arbor: ⅝"
- Arbor speed: 4300 RPM
- Max. dado width: 13/16"
- Max. rip capacity: G0690 - 29½", G0691 - 50"
- Max. depth of cut: 3⅛" @ 90°, 2 3/16" @ 45°
- Approx. shipping weight: G0690 - 542 lbs. G0691 - 572 lbs.

3 HP LEESON® MOTOR!

CAST IRON TRUNNIONS

Product Reviews & Awards ONLINE grizzly.com

FREE 10" CARBIDE TIPPED BLADE!

G0690 ONLY $1250.00

G0691 WITH EXTENSION RAILS ONLY $1350.00

$139 Anywhere in Lower 48 States

## Cyclone Dust Collector

New!

- Motor: 1½ HP, 110V/220V, single phase, TEFC, 3450 RPM, prewired 110V
- Air suction capacity: 775 CFM
- Static pressure at rated CFM: 2.08"
- Intake port: 6" with included 5" optional port
- Impeller: 13½"
- Cartridge filter surface area: 6975 sq. in.
- Overall dimensions: 38¼" W x 23¼" D x 68½" H
- Approx. shipping weight: 210 lbs.

COLLECTION DRUM IS MOUNTED ON CASTERS FOR EASY DUST REMOVAL

THE POWER OF A 2 STAGE CYCLONE IN A NEW COMPACT SIZE!

G0703 INTRODUCTORY PRICE $850.00

$69 Anywhere in Lower 48 States

## 10" Left Tilting Super Heavy-Duty Table Saw with Riving Knife

- Motor: 3 HP, 220V, single-phase, 3450 RPM
- Precision ground solid cast iron table
- Table size with extension wings: 40" x 27"
- Arbor: ⅝" • Max. dado width: ⅞"
- Cutting capacity: 8" L, 26" R
- Max. depth of cut: 3" @ 90°, 2⅛" @ 45°
- Approx. shipping weight: 514 lbs.

New!

FREE 10" CARBIDE TIPPED BLADE!

SHOP FOX® CLASSIC FENCE

G1023RL

INTRODUCTORY PRICE ONLY $1125.00

$89 Anywhere in Lower 48 States

## Sliding Table & Router Attachments For G0690 & G0691 Table Saws

New!

SAW NOT INCLUDED

SUPERB QUALITY!

SLIDING TABLE ATTACHMENT

ROUTER TABLE ATTACHMENT

- Industrial grade anodized aluminum table size: 47" x 9"
- Telescopic anodized aluminum fence size: 28"-48"
- Max. cross cut: 48"

T10222 ROUTER ATTACHMENT $395.00

- Precision ground cast iron table size: 27" x 20"
- Unique "double cross" ¾" x ⅜" T-slots
- Universal router mount
- Table insert size: 4"

T10223 SLIDING TABLE ATTACHMENT $550.00

$39 Anywhere in Lower 48 States

## 12" Left-Tilting Extreme Series® Table Saw with Riving Knife Feature

- Motor: 5 HP, 220V, single-phase
- Table size with extension: 30¾" x 48⅜"
- Arbor speed: 3600 RPM
- Arbor: ⅝" & 1"
- Max. dado width: ¾"
- Max. rip capacity: 36"
- Max. depth of cut: 4" @ 90°, 2¾" @ 45°
- Approx. shipping weight: 756 lbs.

FEATURES DIGITAL BEVEL ANGLE READOUT

INCLUDES 12" BLADE

EXTREME SERIES

G0696X $2195.00

SALE $1995.00

$169 Anywhere in Lower 48 States

## The Ultimate 14" Bandsaw

MADE IN ISO 9001 FACTORY!

- Motor: 1 HP, 110V/220V, single-phase, TEFC, 1725 RPM
- Precision ground cast iron table
- Table size: 14" sq.
- Table tilt: 45° R, 10° L
- Max. cutting height: 6"
- Blade size: 92½" to 93½"L (⅛" - ¾" W)
- Cast iron frame
- Approx. shipping weight: 198 lbs.

INCLUDES QUICK RELEASE BLADE TENSION LEVER, FENCE & MITER GAUGE

G0555 ONLY $450.00

$69 Anywhere in Lower 48 States

## 17" Heavy-Duty Extreme Series® Bandsaw with Cast Iron Wheels & Trunnion

MADE IN ISO 9001 FACTORY!

- Motor: 2 HP, 110V/220V, single-phase, TEFC
- Precision ground cast iron table size: 23⅜" x 17¼"
- Table tilt: 5° left, 45° right
- Max. cutting height: 12"
- Blade size: 131½"L (¼" - 1"W)
- 2 blade speeds: 1700 & 3500 FPM
- Approx. shipping weight: 418 lbs.

DELUXE RESAW FENCE & MITER GAUGE

EXTREME SERIES

G0513X2 ONLY $995.00

$89 Anywhere in Lower 48 States

## 19" Heavy-Duty Extreme Series® Bandsaw

- Motor: 3 HP, 220V, single-phase, TEFC, 1725 RPM
- Precision ground cast iron table size: 26¾" x 19"
- Table tilt: 5° L, 45° R
- Max. cutting height: 12"
- Cutting capacity/throat: 18¼"
- Blade size: 143" L(⅛" - 1¼" W)
- Blade speeds: 1700 & 3500 FPM
- Approx. shipping weight: 480 lbs.

GEARED TABLE TILT MECHANISM

HEAVY-DUTY CAST IRON FENCE & CAST IRON TABLE TRUNNIONS!

MADE IN ISO 9001 FACTORY!

EXTREME SERIES

G0514X2 ONLY $1395.00

$89 Anywhere in Lower 48 States

PRICING CODE 10WOODM

MENTION THIS CODE WHEN PLACING YOUR ORDER

# 1-800-523-4777

TECHNICAL SERVICE: 570-546-9663

FAX: 800-438-5901

3 GREAT SHOWROOMS! BELLINGHAM, WA • MUNCY, PA • SPRINGFIELD, MO

12305

Product Reviews & Awards ONLINE grizzly.com

- OVER A MILLION SQUARE FEET PACKED TO THE RAFTERS WITH MACHINERY & TOOLS
- 2 OVERSEAS QUALITY CONTROL OFFICES STAFFED WITH QUALIFIED GRIZZLY ENGINEERS
- HUGE PARTS FACILITY WITH OVER 1 MILLION PARTS IN STOCK AT ALL TIMES
- TRAINED SERVICE TECHNICIANS AT ALL 3 LOCATIONS
- MOST ORDERS SHIPPED THE SAME DAY • 24 HOUR ORDERING BY PHONE OR ONLINE

**FREE**
FULL COLOR 2010 CATALOG!
THOUSANDS OF HIGH QUALITY MACHINES & TOOLS

## 6" Jointers with Mobile Base

- Motor: 1 HP, 110V or 1½ HP, 110V/220V, single-phase
- Precision ground cast iron table size: 7½" x 46"
- Max. depth of cut: ⅛"
- Rabbeting capacity: ½"
- Cutterhead diameter: 2½"
- Cutterhead speed: 4800 RPM
- Approx. shipping weight: 270 lbs.

FREE SAFETY PUSH BLOCKS

RACK & PINION FENCE ADJUSTMENT

BUILT IN MOBILE BASE

G0452 1 HP MOTOR ~~$435.00~~
SALE $425.00

G0452Z 1½ HP WITH SPIRAL CUTTERHEAD
~~$695.00~~ SALE $675.00

$69 Anywhere in Lower 48 States

## 8" x 76" Parallelogram Jointers

- Motor: 3 HP, 220V, single-phase, TEFC, 3450 RPM
- Precision ground cast iron table size: 8" x 76⅜"
- Cutterhead speed: 5350 RPM • Cutterhead dia.: 3⅛"
- Deluxe cast iron fence: 36"L x 1¼"W x 5"H
- Max. rabbeting depth: ½"
- Approx. shipping weight: 597 lbs.

G0490X SPIRAL CUTTERHEAD

FREE SAFETY PUSH BLOCKS

G0490 ONLY $895.00

$139 Anywhere in Lower 48 States

G0490X WITH SPIRAL CUTTERHEAD ONLY $1195.00

## 12" x 83½" Parallelogram Jointers

- Motor: 3 HP, 220V, single-phase
- Precision ground cast iron table size: 12¾" x 83½"
- Cutterhead speed: 4950 RPM
- Max.depth of cut: ⅛"
- Max. rabbeting capacity: ¾"
- Approx. shipping weight: 1059 lbs.

PEDESTAL MOUNTED MAGNETIC SAFETY SWITCH

HANDLES FOLD IN FOR ADDED SAFETY

INCLUDES FREE SAFETY PUSH BLOCKS

G0609 ONLY $1895.00

G0609X WITH SPIRAL CUTTERHEAD
~~$2295.00~~ SALE $2250.00

$250 Anywhere in Lower 48 States

## 15" Planer/Moulder

- Motor: 2½ HP, 110V, single-phase
- Max. cutting width: 15"
- Max. cutting height: 6"
- Min. stock thickness: ⅛"
- Min. stock length: 17"
- Max. planer cutting depth: 3/32"
- Feed rate: 11 FPM & 22 FPM
- Cutterhead dia.: 3 1/64"
- Cutterhead speed: 5500 RPM
- Cuts per minute: 11,000
- Table size: 15" x 16"
- Approx. shipping weight: 181 lbs.

CONVENIENT BUILT-IN DUST COLLECTOR!

QUICK CAM ADJUSTABLE FEED ROLLERS

G0477 ~~$850.00~~
SALE $795.00

$69 Anywhere in Lower 48 States

## 15" Planer

- Motor: 3 HP, 220V, single-phase
- Max. stock thickness: 8"
- Min. stock thickness: 3/16"
- Min. stock length: 8"
- Max. cutting depth: ⅛"
- Feed rate: 16 & 30 FPM
- Cutterhead dia.: 3"
- Number of knives: 3
- Knife size: 15" x 1" x ⅛"
- Cutterhead speed: 5000 RPM
- Table size: 15" x 20"
- Approx. shipping weight: 675 lbs.

PRECISION GROUND CAST IRON BED & INFEED OUTFEED TABLES

BUILT IN MOBILE BASE

G0453 ONLY $995.00

$139 Anywhere in Lower 48 States

## 20" Planers

- Motor: 5 HP, 220V, single-phase
- Table size: 20" x 25¾" (20" x 55½" with extension)
- Max. stock thickness: 8"
- Min. stock thickness: 3/16"
- Min. stock length: 7½"
- Max. cutting depth: ⅛"
- Cutterhead speed: 5000 RPM
- Feed rate: 16 & 20 FPM
- Approx. shipping weight: 920 lbs.

PRECISION GROUND CAST IRON BED & INFEED OUTFEED TABLES

BUILT IN MOBILE BASE

G0454
ONLY $1495.00

G0454Z WITH SPIRAL CUTTERHEAD
~~$2395.00~~ SALE $2295.00

$169 Anywhere in Lower 48 States

## 12 Speed Heavy-Duty 14" Floor Drill Press

- Motor: ¾ HP, 110V, single-phase
- Precision ground cast iron table
- Table size: 11⅜" sq.
- Table swing: 360°
- Table tilts: 90° L & R
- Swing: 14"
- Drill chuck: ⅛" - ⅝"
- Drilling capacity: ¾" steel
- Spindle taper: MT #2
- Spindle travel: 3¼"
- Collar size: 2.595"
- Approx. shipping weight: 171 lbs.

INCLUDES BUILT-IN LIGHT (BULB NOT INCLUDED)

G7944 ONLY $325.00

$69 Anywhere in Lower 48 States

## 16" x 43" Swivel Head Wood Lathe w/Cast Iron Legs & DRO

- Motor: 2 HP, 110V, single-phase
- Precision milled cast iron bed
- Dist. between centers: 43"
- Swing over bed: 16" • Spindle bore: ⅝"
- Spindle & tailstock tapers: MT#2
- 10 speeds: 600- 2400 RPM
- Approx. shipping weight: 372 lbs.

HEADSTOCK SWIVELS FOR OUTBOARD TURNING

INCLUDES 6" FACE PLATE, CUP LIVE CENTER & SPUR CENTER

G0462
ONLY $525.00

$89 Anywhere in Lower 48 States

## 2 HP Dust Collector w/2.5 Micron Bag

- Motor: 2 HP, 220V, single-phase, 3450 RPM
- Motor amp draw: 12 Amps
- Air suction capacity: 1550 CFM
- Static pressure: 11"
- Bag capacity: 5.7 cu. ft.
- Impeller: 12¾" balanced steel, radial fin
- Height w/bags inflated 78"
- Portable base: 21¼" x 33½"
- Approx. shipping weight: 126 lbs.

FREE G5376 2 STAGE CYCLONE SEPARATOR

MADE IN ISO 9001 FACTORY!

G1029Z2 ONLY $279.00

$69 Anywhere in Lower 48 States

NO DEALERS
NO MIDDLEMEN
BUY DIRECT & SAVE!

grizzly.com®
OVER 12,000 PRODUCTS ONLINE!

BillMeLater · VISA · MasterCard · American Express · Discover

# in this issue

## PROJECTS


18 **Benchtop Chisel Rack**

32 **Easy and Elegant Hall Mirror**
Build this beautiful home accent using only a few basic tools.

38 **On the Cover: Country Cabinet**

68 **For The Shop: Dead-flat Assembly Table**
Learn to build a torsion box.


## SKILL BUILDERS


26 **Finishing: How to Beat Blotchy Stain**

30 **Taming Tear-out in Veneered Plywood**

36 **Dealing With Naughty Knots**

62 **Kitchen Makeover for Woodworkers**
Give the busiest room in the house a facelift using tools and skills you already have.

## DEPARTMENTS


6 **Sounding Board**

8 **Shop Tips**

76 **Ask *WOOD***

92 **What's Ahead**

## TOOLS & MATERIALS


16 **Wise Buys: Drill-press Tables**

20 **The Ultimate Outdoor Wood**
It resists bugs, moisture, and rot, and costs less than synthetics and composites.

50 **Must-have Chisels and How to Use Them**

56 **Tool Test: Best Benchtop Planers**

82 **Shop-Proven Products**
Router table box-joint jig, magnetic fences, super-accurate router guide, and more.

This seal is your assurance that we build every project, verify every fact, and test every reviewed tool in our workshop to guarantee your success and complete satisfaction.

# on the web

woodmagazine.com

## GET A LOT MORE COUNTRY

Find dozens of plans for Country-style furnishings at woodmagazine.com. Enter "country" in the box, then click on Search.

## TWO BUCKS TO A SHARPER SHOP

Find plans for nearly 150 shop projects, like the mitersaw station, *below*, for only $1.99 each. Visit woodmagazine.com/plans, then scroll to the bottom of the page and click on "$2 Tuneups."

## THE BEST FORUMS, NOW BETTER!

With *WOOD* Online's new forum section, you can subscribe to topics, get e-mail notification when another reader answers your question, and more (including improved searching of the forums). Check it out at woodmagazine.com/forums.

## THESE TEENAGE WOODWORKERS WILL IMPRESS

Learn from these young 'uns building projects on WOODTube (woodmagazine.com/woodtube):

- Kosta Viennas (*below*), 14, builds a bookcase
- Alex Lesniak, 13, turns pens for college money
- Denis Rezendes, 16, and his bow-front desk

# SHOP FOX® INNOVATIVE PRODUCTS SINCE 1989!

2 YEAR WARRANTY

SHOP FOX® machines are backed by a 2 Year Warranty!

## 12" TABLE SAW
### with Riving Knife & Extension Table

- 5 HP, 220V, single-phase motor
- Precision ground cast iron table size: 30¾" x 78¾"
- Arbor size: 1" • Arbor speed: 3600 RPM
- Blade tilt: left • Max. rip capacity: 52"
- Max. depth of cut: 4" @ 90°, 2¾" @ 45°

**W1761** 5 HP, 12" Table Saw

## VARIABLE SPEED PLANER/MOULDER with STAND

- Motor: 2 HP, 220V, single-phase
- Precision ground cast iron table & wings
- Table size with wings: 36¼"L x 10"W
- Max. cutting width: 7"
- Max. planing height: 7½"
- Max. planing depth: ⅛"
- Max. moulding depth: ¾"
- Knife size: 7⅛" x 1½" x ¼" HSS
- Cutterhead speed: 7000 RPM
- 4" dust port
- Rubberized steel feed rollers
- Approx. shipping weight: 330 lbs.

*We also carry an extensive selection of moulding knives for this machine!*

**PATENTED**

Precision Ground Cast Iron Table

Heavy-Duty Cabinet Stand

Table Wings Have T-slots for Easy Guide Rail Adjustment

**W1812** Planer/Moulder

## 8" JOINTER
### with Parallelogram Adjustable Beds

- 3 HP, 220V, single-phase, TEFC motor
- Precision ground cast iron parallelogram design table measures 8" x 76⁵⁄₁₆"
- 4 knife, 5350 RPM cutterhead
- Large center mounted cast iron fence
- Rabbeting capacity: ⅝"

**W1741** 8" Jointer

## SPIRAL CUTTERHEAD PLANERS
### with Built-in Mobile Base

- 3 HP or 5 HP, 220V, single-phase motor
- Precision ground cast iron table & extension wings
- 2 speed gear box
- 2 adjustable bed rollers
- German-made carbide insert spiral cutterhead
- Pedestal mounted thermal overload magnetic safety switch
- Built-in locking mobile base

**W1742S** 15" Planer
**W1754S** 20" Planer

## 10" SLIDING TABLE SAW
### with Scoring Blade & Riving Knife

- 5 HP, 220V, single-phase, TEFC motor
- Table size with extension wings: 40" W x 47" L
- Sliding table size: 12¼" W x 63" L
- Scoring blade diameter: 3⅛"
- Scoring blade arbor speed: 8,000 RPM
- Main blade arbor speed: 4,000 RPM
- Single lever locking fence

**W1811** 10" Sliding Table Saw

# OUTSTANDING SHOP FOX® ACCESSORIES

## ADJUSTABLE MOBILE BASES

STRONGER FRAME WITH IMPROVED WHEELS AND GUSSETED SUPPORTS!

**D2260A**
Mini Mobile Base
600 lb. capacity

**D2057A**
Heavy-Duty Mobile Base
700 lb. capacity

**D2058A**
Super Heavy-Duty Mobile Base
1300 lb. capacity

New

**D2259A** Extension Kit (fits all models)
**D2246A** 36" Extension Bars (fits all models)

## RIGHT ANGLE JIG

Cut tenons, dados, rail ends and finger joints safely & with complete accuracy. The SHOP FOX® Right Angle Jig is constructed using top quality aluminum castings & plates which are machined to exacting tolerances.

- Solid aluminum
- Extended depth: 13"
- Closed depth: 7½"
- Height: 8"
- Max. horiz. opening: 1⅜" x 8"

## ADJUSTABLE ROLLER STAND

- Stand length is adjustable from 19½" to 54"
- Number of rollers: 9
- Stand height adjusts from 24½" to 38"
- Roller diameter: 2"
- Two-way locking swivel casters: 4¼" diameter
- 300 lb. capacity

**WOODSTOCK® INTERNATIONAL IS ALSO HOME TO THESE OTHER FINE BRANDS:**
**STEELEX®, PRO-STICK®, PLANER PAL®, JOINTER PAL®, BOARD BUDDIES®, PARROT VISE®, ROMAN CARBIDE® ROUTER BITS AND SHAPER CUTTERS.**

**VISIT OUR WEBSITE OR CALL TOLL FREE TO FIND AN AUTHORIZED DEALER NEAR YOU.**

**SHOPFOX.BIZ**
sales@shopfox.biz WHOLESALE ONLY

WOODSTOCK INTERNATIONAL INC.

**1-800-840-8420**

SHOP FOX® is a registered trademark of Woodstock International, Inc.

12309

Better Homes and Gardens®
WOOD®
woodmagazine.com

March 2010 | Vol. 27, No. 1 | Issue No. 196

Karl made gift boxes (issue 174) from maple and padauk for his wife and daughters.

EDITOR-IN-CHIEF
**BILL KRIER**

Managing Editor **MARLEN KEMMET**
Deputy Editor **DAVE CAMPBELL**
Art Director **KARL EHLERS**
Senior Design Editor **KEVIN BOYLE**
Techniques Editor **BOB WILSON**
Tool & Techniques Editor **BOB HUNTER**
Multimedia Editor **LUCAS PETERS**
Multimedia Editor **CRAIG RUEGSEGGER**
Design Editor **JEFF MERTZ**
Associate Art Director **GREG SELLERS**
Production/Office Manager **MARGARET CLOSNER**
Administrative Assistant **SHERYL MUNYON**

Dave built this ash serving tray for a church fund-raising auction.

Photographers **JASON DONNELLY, SCOTT LITTLE, JAY WILDE**
Contributing Illustrators **TIM CAHILL, LORNA JOHNSON, ROXANNE LeMOINE**
Technical Consultants **BOB BAKER, DOUG HICKS**
Contributing Craftsman **JIM HEAVEY**
Contributing Proofreaders **BABS KLEIN, IRA LACHER, JIM SANDERS**

Publisher **MARK L. HAGEN**

**ADVERTISING AND MARKETING**

**CHICAGO:** 333 N. Michigan Ave., Suite 1500, Chicago, IL 60601
Marketing Manager **AMANDA SALHOOT**
Advertising Manager **JACK CHRISTIANSEN**
Direct Response Advertising Representative **LISA GREENWOOD**
Assistant **TIM BAARDA**
**ATLANTA:** Navigate Media
**DETROIT:** RPM Associates

Business Manager **JEFF STILES**
Consumer Marketing Director **TODD BIERLE**
Associate Director of Marketing-Newsstand **TOM DEERING**
Production Manager **SANDY WILLIAMS**
Advertising Operations Manager **JIM NELSON**
E-Commerce Manager **MATT SNYDER**

Vice President/Group Publisher **TOM DAVIS**

**MEREDITH NATIONAL MEDIA GROUP**
President **JACK GRIFFIN**

**EXECUTIVE VICE PRESIDENTS**
President of Consumer Magazines **TOM HARTY**
Chief Brand Officer **ANDY SAREYAN**
Chief Digital Officer **DOUG OLSON**
President, Meredith Integrated Marketing **MARTIN F. REIDY**

**SENIOR VICE PRESIDENTS**
Corporate Marketing Officer **NANCY WEBER**
Consumer Marketing **DAVID BALL**
Corporate Sales **MICHAEL BROWNSTEIN**
Editorial Director, Des Moines **GAYLE GOODSON BUTLER**
Editorial Director, New York **SALLY LEE**
Finance **MIKE RIGGS**
Meredith 360° **JEANNINE SHAO COLLINS**
Meredith Women's Network **LAUREN WIENER**

**VICE PRESIDENTS**
Chief Technology Officer **TINA STEIL**
Direct Response & Travel **PATTI FOLLO**
New Media & Marketing Services **ANDY WILSON**
Newsstand **DAVID ALGIRE**
Production **BRUCE HESTON**
Research Solutions **BRITTA WARE**

meredith

President and Chief Executive Officer **STEPHEN M. LACY**
Chairman of the Board **WILLIAM T. KERR**

**In Memoriam — E.T. Meredith III (1933–2003)**

Our subscribers list is occasionally made available to carefully selected firms whose products may be of interest to you. If you prefer not to receive information from these companies by mail or by phone, please let us know. Send your request along with your mailing label to Magazine Customer Service, P.O. Box 37452, Boone, IA 50037-0452.

© Copyright Meredith Corporation 2010. All rights reserved. Printed in the U.S.A.
Retail Sales: Retailers can order copies of WOOD for resale by e-mailing jennifer.buser@meredith.com

**SUBSCRIBER SERVICE**
Go to woodmagazine.com/help or write to
WOOD magazine, P.O. Box 37439, Boone, IA 50037-0439

Jim built these alder tables and finished them with a walnut and cherry stain mixture.

ARE YOU ON BOARD?
97% Approval Rating
When Independently Tested
Top Ranked ZAR® Features
1. APPEARANCE
2. PERFORMANCE
3. EASE OF USE
Before
Before
After
After
ZAR®
Brand X
THE DROP TEST
A drop of stain was allowed to stand for 5 minutes. When ZAR was wiped off it covered evenly without a blotch mark. "Brand X" left a noticeable blotch.
Have You Made the Switch?
Go to www.ugl.com/switch
to tell us your story.
For more information or a dealer near you
visit www.ugl.com or call 1-800-272-3235
Premium Quality
ZAR
Wood Stain

# Sounding Board

Our bulletin board for letters, comments, and timely updates

## Readers respond to Norm's impact on woodworking

Thanks for the article about Norm Abram in issue 192 (September 2009). I've watched *The New Yankee Workshop* and *This Old House* for years, and have enjoyed learning from Norm's work and advancing my skills. He's long overdue to be recognized for his contributions to woodworking.

*—John Parmelee, Centre Hall, Pa.*

My friend was teaching his son how to turn wood on a lathe, and after a while the young man became frustrated and shut down the machine, ready to give up. Seeing this, my friend suggested they take a break. Then, father put his arm around son to console him and said, "You know, son, there's only been one perfect carpenter. Do you know who that was?" After thinking for a few seconds, his son blurted, "Ahh, you mean Norm!"

*—Sean Brewer, Richmond, Ky.*

I have enjoyed watching Norm grow from a carpenter into a craftsman. From the early days of "alternate the end grain," using mostly nails and way too much glue, to his total disregard of wood movement, to slopping polyurethane on everything, he has grown into a well-rounded craftsman. He even frequently corrects some of his early incorrect practices.

*—Howard Acheson, Southport, N.C.*

Although I don't always agree with Norm, I share his appreciation for the value and beauty of things wood.

*—Ted Prinz, Webberville, Mich.*

I am not a fan of *The New Yankee Workshop*. I sometimes watch an episode, but don't go out of my way to find it. I thought the term "America's Woodworker" was a bit overdone and too much hype. Norm might be responsible for starting some woodworkers on their way, but nowhere near all of us.

*—John Rodgers, Whittier, Calif.*

When my brother and I were kids, we would stay up late at night to see *The New Yankee Workshop* reruns on PBS. We even placed a towel under the door so the light of the TV wouldn't give us away. Norm is an Everyman with an exceptional talent not just in woodworking, but just as importantly as a teacher. I have to wonder where my passion would lie today if not for Norm.

*—Jose Salazar, Indian Springs, Nev.*

Norm Abram's instruction is the reason I'm a capable woodworker today. I began watching *The New Yankee Workshop* over a decade ago, and for a long time Norm provided my only exposure to woodworking. During those early years, I'd go to my shop and try to duplicate what Norm did, usually with embarrassing results.

But over time and with much practice, I developed enough skills to build projects, from small ones at first to, eventually, furniture for my house. So to his critics, I say, "Leave Norm alone." I have to believe he's helped countless people like me get started in woodworking, and those are skills I'll have for the rest of my life.

*— Steve Anderson, Roann, Ind.*

Thank you for featuring Norm Abram. The article was packed with good information that we don't get from his show. I have been a follower of Norm since his beginning on TV and have great respect for what he does and how he does it.

*— John Roane, Sarasota, Fla.*

### *New Yankee* calls it quits

After 20 seasons of original programs, *The New Yankee Workshop* has hung up its tool belt. Last fall, *NYW* Executive Producer Russ Morash announced that the show had ceased production. No word yet on whether reruns will continue. Norm Abram will continue to co-host *This Old House*, now in its 30th year on PBS.

## HOW TO REACH US

**For woodworking advice:**
Post your woodworking questions (joinery, finishing, tools, turning, dust collection, etc.) on one of our online forums at woodmagazine.com/forums.

**To contact our editors:**
Send your comments via e-mail to woodmail@woodmagazine.com; or write to *WOOD* magazine, 1716 Locust St., LS-221, Des Moines, IA 50309.

**Subscription assistance:**
To notify us of an address change or to get help with your subscription, visit woodmagazine.com/service. Or write to *WOOD* magazine, P.O. Box 37439, Boone, IA 50037-0439. Please enclose your address label from a recent magazine issue.

**To find past articles:**
See our index at woodmagazine.com/index.

**To order past issues and articles:**
For past issues of *WOOD* magazine, our special issues, or downloadable articles, visit our online store at woodmagazine.com/store. Some issues are sold out.

**Updates to previously published projects:**
For an up-to-date listing of changes in dimensions and buying-guide sources from issue 1 through today, go to woodmagazine.com/editorial.

# Free "Online Videos" show you how to join it, rout it, and clamp it, at...

# MLCSwoodworking.com

## "Spin Control"

Our Router Speed Control reduces speed without reducing torque! Work at the best speed for your bit and wood. Adjust from 0 RPM to full speed.

#9410 • 20 AMP.....$34.95

## "Hot New Joints"

The Fast Joint System creates unique joints quickly and easily. Includes everything you need to make exquiste joinery: The jig, joint templates, clamps, bushings and router bits. Two Sets available.

#9411 • 4 Template Set.....$169.95

#9422 • 11 Template Set....$269.95

## "45 Different Cuts"

Our 45 piece, carbide tipped Router Bit Set includes straight, round over, chamfer, cove... 20 profiles in all! FREE lube!

1/4" shank • #6074.....$119.95

1/2" shank • #8374.....$119.95

## "Band Together"

The Merle Band Clamp features dual-pivoting jaws that align to any angle! Features 23' steel banding and four corners. The Shopmaster Set includes 4 clamps and 8 extra corners.

#9012 • Merle Clamp .....$27.95

#9007 • ShopMaster Set .....$114.95

## "Routing Heavyweight"

Our 120 lb. Heavyweight Router Table and Fence features a large cast-iron top, universal clamping system, tilt-up access, split fence with dust port, sturdy stand and miter gauge.

#2387 • ON SALE! Save $70.....$299.95

---

1-800-533-9298

PROFESSIONAL ROUTER BITS & WOODWORKING PRODUCTS

MLCS

FREE SHIPPING!

IN CONTIGUOUS USA • P.O. BOX 165 DI, HV, PA, 19006 *2010

# Shop Tips

Helping you work faster, smarter, and safer

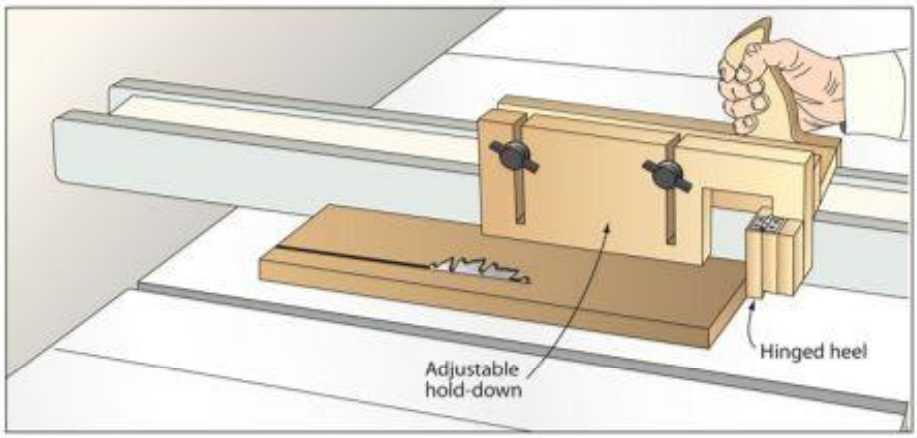
## Top Shop Tip

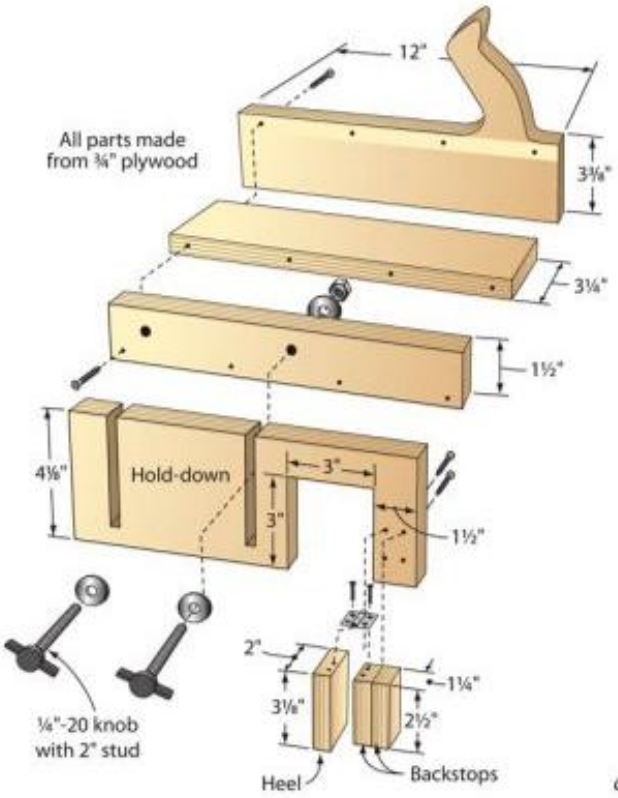
### At-the-ready pushblock

After once more fumbling for a pushblock in the middle of a tablesaw cut—a distraction that can cause uneven, burned cuts—I made this pushblock that stays on my fence just in front of the blade until I need it. The dimensions shown here are for a Beisemeyer-style fence, but you can adjust them to fit your fence. (See the *WOOD Patterns*® insert, *page 45*, for the handle pattern.)

To use the pushblock, place it on the fence, near the front, with the hold-down adjusted to the workpiece thickness. Grip the handle with your right hand; hold the pushblock stationary; and, with your left hand, push the workpiece under the holddown (the hinged heel will flip up). Continue feeding the workpiece into the blade. Once the tail end of the workpiece passes the hinged heel, the heel drops down allowing you to push the workpiece past the blade. Replace the heel when it gets chewed up from cutting narrow stock.

*—Aaron Perkins, Lloydminster, Alta.*




*continued on page 10*

## The Top Tipster

Photo: Kristen Heatley

Aaron Perkins didn't let a diagnosis of Lou Gherig's disease (*Amyotrophic lateral sclerosis*) defeat him. He got married, started a family, and took up woodworking. As the disease progresses, Aaron simply uses it as an opportunity to upgrade his shop and tackle new woodworking challenges. After mastering box-making, he is now buying a lathe and trying his hand at woodturning.

**Aaron receives a Rockler dovetail jig package including a dust hood and extra templates. Thanks for the Top Tip, Aaron!**

## Top tips earn tools!

Tell us how you've solved a workshop stumper. If we print it, you'll get $100 and a copy of *450+ Best-Ever Shop Tips* (woodmagazine.com/450tips). And, if your idea garners Top Shop Tip honors, we'll also reward you with a tool prize worth at least $300.

Send your best ideas, along with photos or drawings and your daytime phone number, to: **Shop Tips, WOOD Magazine, 1716 Locust St., LS-221, Des Moines, IA 50309-3023**. Or, by e-mail: shoptips@woodmagazine.com. Include your contact info in the e-mail.

Because we try to publish original tips, please send your tips only to *WOOD*® magazine. Sorry, submitted materials can't be returned.

# How Do You Create Endless Cabinet Door Making Possibilities?

Profile Shown:
**Round Over**
(#99-760)

Patented design allows for multiple rail & stile project combinations

## With Freud's New Premier Adjustable Rail & Stile System

Now with Freud's new, patented Premier Adjustable Rail and Stile router bit system, you are able to build any style of cabinet door in a wide range of door thicknesses and sizes! This extremely easy-to-use solution gives you unlimited creative freedom, and solves the long-standing limitations of existing frame and panel door construction.

This one of a kind solution allows you to create extended tenons for extra door joint strength, adjust groove width for different panel thicknesses and choose from a variety of material thicknesses for your stiles and rails (5/8" to 1-1/4"). Optional add-on cutters increase your bits' capabilities even more, allowing you to create glass panel doors and thicker doors with double profiles.

Four profiles are available; **Round Over** (#99-761), **Ogee** (#99-761), **Round Over Bead** (#99-762), and **Bevel** (#99-763).

Standard stub tenons in regular 3/4" stock

Extended tenons for strong joints in larger doors

Glass & screen panel capability

Double Sided Profiles in stock up to 1-1/4" thick

1st by Freud

freud®
**Precisely the best.**

To find more information, please go to:
**www.freudtools.com/PremierRailandStile**

**Others**

Industry Standard **Stub Tenons Joints**

VS

**Freud's New Premier Rail & Stile System**

Industry Standard **Stub Tenons Joints** +

Extended Tenons **For Extra Strength** +

Adjustable Grooves **For Variable Panel Thickness** +

Cabinet Doors in Varying Material Thickness +

Glass/Screen Panel Doors +

Double Sided Profile Doors

To sign up for Freud's e-mail newsletter or to find a dealer near you visit: www.freudtools.com

Red router bits are a registered trademark of Freud America, Inc. (US) 1-800-472-7307

Two-Stage Cyclone Dust Collectors

WOOD MAGAZINE TOP NEW TOOLS 2009

3 HP Cyclone
2300 MAX CFM
55 Gallon Drum
$1799.00

2 HP Cyclone
1700 MAX CFM
35 Gallon Drum
$1299.00

3 HP Dust-force
1 Micron Canisters
42 Gallon Bags
$1269.00

1.5 HP Dust-force
1 Micron Bag
1250 Max CFM
$369.00

Single-Stage Dust Collectors

1.5 HP Dust-force
1 Micron Canister
42 Gallon Bag
$575.00

High Efficiency Air Filtration Systems

WOOD MAGAZINE TOP TOOL APPROVED 2006

Air-Tech 750-ER
1050 MAX CFM
$339.00

JDS Company SINCE 1987

For more information call:
800.480.7269
www.jdstools.com

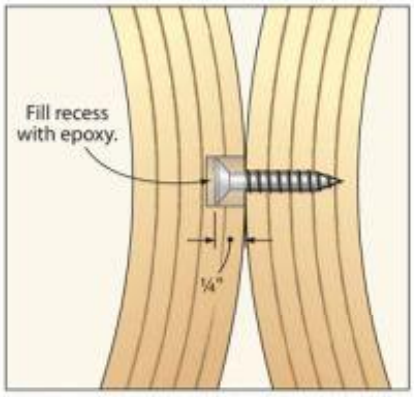

## Shop Tips

### Throwing joinery a couple of curves

My latest project, a free-form globe stand, required joining the concave sides of two curved pieces. Naturally, there is little gluing surface. Here's how I joined the two pieces:

On one piece, I drilled a pilot hole and drove in a wood screw, leaving the head protruding ¼" or so. In the mating piece, I drilled a counterbore to fit the screw head, as shown. After filling the counterbore with fast-curing epoxy, I joined the pieces, inserting the screw head into the epoxy, and clamped the two pieces together. Be sure to clean up any squeeze-out with acetone before the epoxy cures.

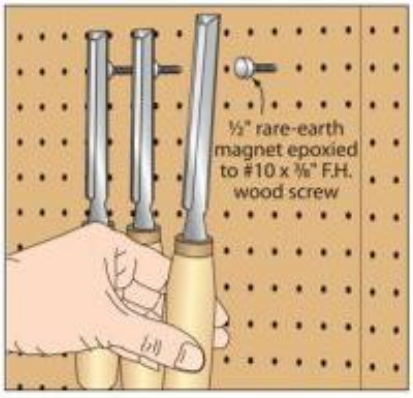
*—Sylvio Dugas, Kedgwick, N.B.*




### No-hook hangers for perforated hardboard

Tool hooks seem to come off perforated hardboard as easily as the tools they hold, so I came up with a different solution. I epoxied ½" rare-earth magnets to the heads of #10 × ⅜" flathead screws. These thread easily by hand into a typical ⅛" perforated-hardboard hole. I use them to hold chisels, screwdrivers, squares, files, and wrenches.

*—Mark Thiel, Coral Springs, Fla.*



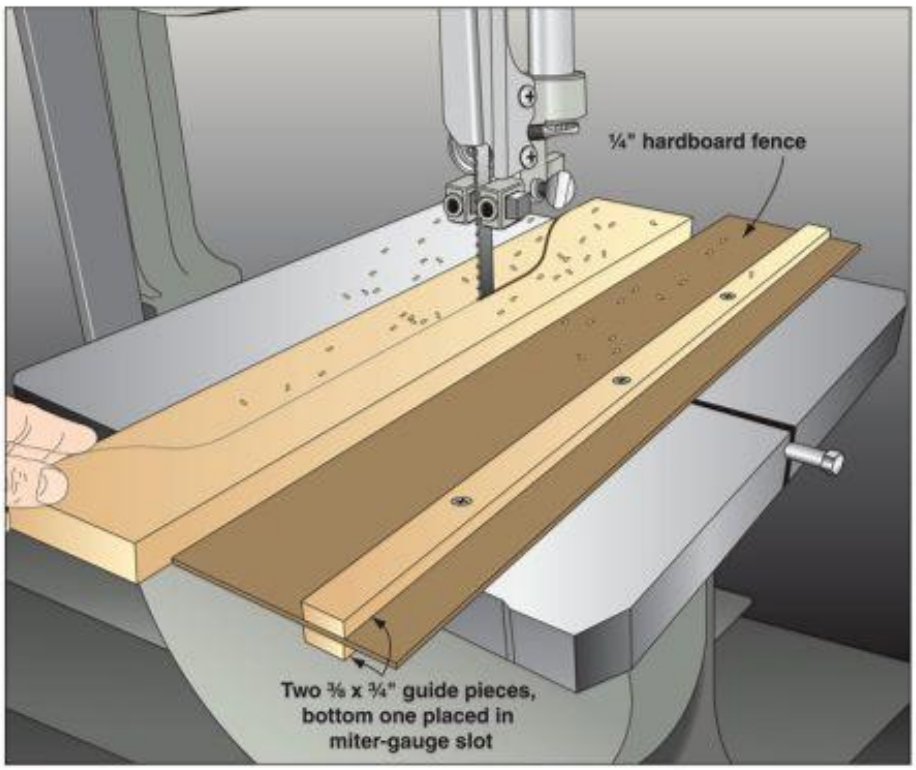
## Quick cutting for curves and straightaways

A bed rail on a recent project called for curved ends with a long straight section in between. Normally, I would rough-cut curves on the bandsaw and sand them to final shape, but it's hard to freehand-cut the long straightaway precisely.

In order to make the straight portion of the cut truly straight, I came up with this removable guide that drops into my bandsaw's miter-gauge slot. Here's how to make it: Position a piece of hardboard to act as a fence for cutting the workpiece along the straight line. Sandwich the hardboard between two pieces of ⅜×¾" hardwood with wood screws, as shown.

Start the cut with the curved section. When you get to the straight section, pause to drop the guide into place, and continue the cut. When you reach the opposite curved end, remove the guide and complete the cut.

*—Jeff Stikeleather, Mill Spring, N.C.*




*continued on page 12*




# The new 12" Turncrafter Commander VS Midi Lathe

**Model: #TCLC12VS Introductory Price $399.95**

**More Power! More Features! More Capacity! More Fun!**

Digital readout lets you work at precise speeds and is easy to read
24 indexing positions with spindle locking
Convenient work light with 18" flex cable makes it easier to see even the most intricate work
Heavy-duty, ball bearing, tail stock center provides great grip with less stress to avoid spliting
Tool storage rack keeps chisels and other tools close at hand
Includes 6" & 12" toolrests
Vary speeds from 150 to 4000 RPM for shaping or finishing with the turn of a knob
Designed for easy belt acess and removal
Convienent carrying handles
1 HP variable speed motor provides superior power and performance
Cast iron base is sturdy, stable and accepts optional extension bed for turning projects up to 43"
SBC microprocessor technology delivers pinpoint control and reliability
Turncrafter COMMANDER

**GET STARTED**

making spectacular pens this spring

*Introducing the Art Deco Pens from David Broadwell*

***Visit online for our FREE Pen Making DVD***

**Penn State Industries**

**1-800-377-7297 • www.pennstateind.com**

# Ready for the next level?

## Berea Brand Pen Kits!

- High Quality
- Original Designs
- Reasonably Priced

Visit us at www.bereahardwoods.com or call us at 1-877-736-5487 or e-mail us at bereahard@aol.com

BereaHardWoods Co. Inc.
18745 Sheldon Rd • Middleburg Hts., OH 44130



# CAUTION:

## FAST, SIMPLE SHARPENING WILL LEAD TO MORE PROJECTS

Drill Doctor
The Drill Bit Sharpener

**Sharpens your dull and broken drill bits**

- E-Z Align System — assures correct sharpening alignment
- Patented dual-cam sharpening system — professionally sharpen your bits
- Diamond sharpening wheel — long lasting

See our video demos at
www.DrillDoctor.com

WORK SHARP
The Wood Tool Sharpener

**Sharpens your woodworking tools**

- Fast, precise, repeatable results every time
- Air-cooled dry sharpening system — no mess
- Complete sharpening system, no jigs needed

DRILL DOCTOR and WORK SHARP created & assembled in the USA

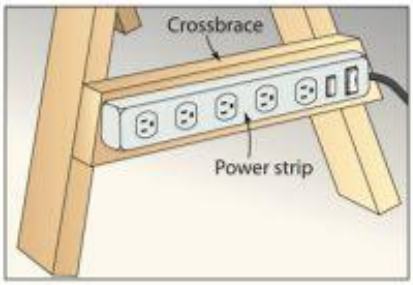
See our video demos at
www.WorkSharpTools.com


# Shop Tips

## A new definition of "horse power"

To make sawhorses more convenient and eliminate tripping over power cords running to tools, I mounted a power strip to the cross brace. This means I only have to snake one extension cord to my work location, but I can work with multiple tools without constantly bending and chasing down the plug.

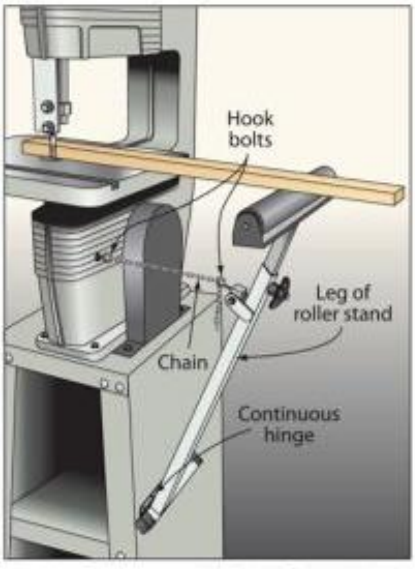
*—Ron Whittemore, Rehoboth, Mass.*




## Stowaway stock support tucks in tight spaces

I don't have room for a dedicated bandsaw outfeed support, so this stowable roller is just the ticket. To make it, I sacrificed an adjustable roller stand by removing the stationary leg, and shortening one foot of the adjustable leg so it didn't stick out from the bandsaw base. Then I mounted the stand on the bandsaw base with a continuous hinge. A chain between the bandsaw and the outfeed stand allows me to extend the support, or stow it against the bandsaw.

*—Curtis Simpson, Anaheim, Calif.*




*continued on page 14*

# SOMMERFELD'S TOOLS
*For Wood*™

NEW!

## The New Tandem Drawer Slide Mounting Tool!

Great for installing **ALL** under-mount drawer slides with soft close feature!

Shown with Blum Tandem slide attached

SDST Standard Drawer Slide Mounting Tool
**Sale $29.90**

NEW!

TDST Tandem Drawer Slide Mounting Tool
**Sale $29.90**

Magnetic design for easy drawer slide installation every time

Learn the innovative Sommerfeld methods from these eight DVD's. Over 7 Hours of HOW-TO Instruction
**8 DVD's Sale $49.90**

NEW!

## The New Angle Making Set!

08002 Angle Making Set
**Sale $219.90**

**NEW Angle Making Set** – Now you can cut curves and angles easily with the Sommerfeld Angle Making Set! Cut perfect arches and add interest to traditional corners. Create curves with flat faces to add a unique touch. Rout flutes into the flat faces of curves and make the curve even more interesting! This set includes 11.25°, 15°, 22.5° and 30° degree matched bits to create most any angle or curve.

Create curves with flat faces

Easily make curves and arches

*We have thousands of bits in stock...*

For a FREE 80 page catalog call today...

Source Code WM0210

**Toll Free 888-228-9268 • Visit us on the web... www.SOMMERFELDTOOLS.com**



Model: TEMP2PCX

# Breathe Easier with a One Stop Dust Collection Solution

**With 20 years experience and a superior product line, the experts at Penn State Industries will provide you effective solutions for a cleaner shop.**

INTRODUCING
**The TEMPEST™ Portable**
2 HP Dust Collector
ONLY $895.00

- 1025 CFM • Great filtration
- Ideal alternative to double bag collector
- Roll up to your work anywhere
- Features maintenance free recirculating cleanout

**TEMPEST ™ S-series Cyclones**
- ▲ 2.5HP - 1450CFM - $995
- ▲ 3.5HP - 1700CFM - $1125
- ▲ 5.0HP - 1800CFM - $1395

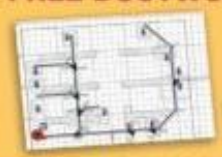
**Premium Ductwork**
- ▲ Pipe for maximum airflow
- ▲ Fittings and hoods for most applications

**Ductwork Planning Service**
- ▲ An accurate layout of your shop to save you hours of planning

**More Collection Solutions**
- ▲ High performance bag-style collectors, air cleaners and portable collectors ideal for any size home shop

## 2 GREAT WAYS TO SAVE

**FREE DUCTWORK PLAN**



**& $100 OFF**
S-series TEMPEST™ cyclones.
Call for details and mention code: **WOOD6**
*Offer expires 5/1/2010*

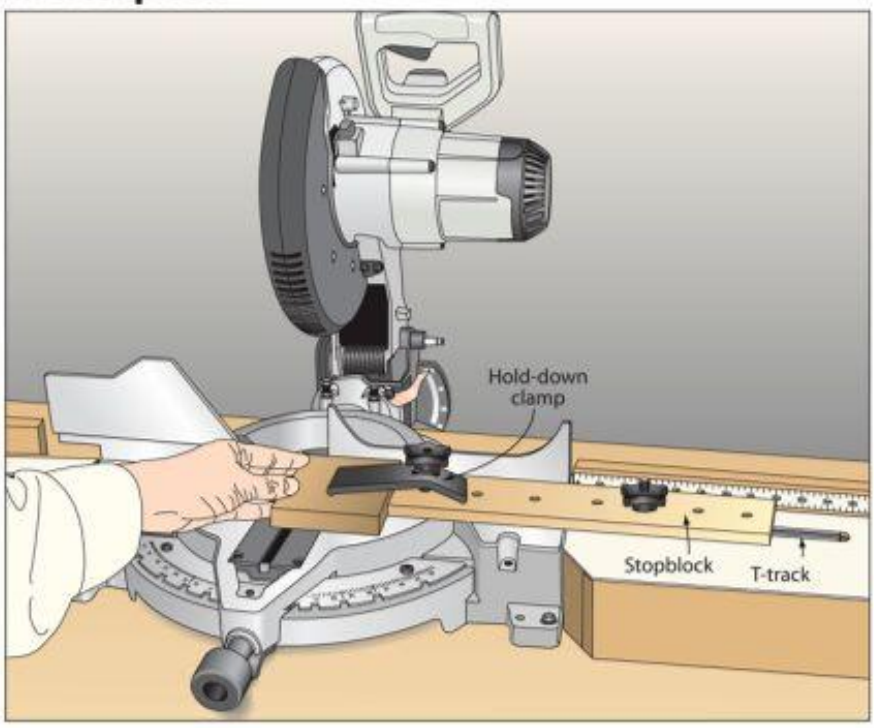
Call Bill for your free consultation at 1-800-377-7297 x16 to help you plan the best solution for your shop or CNC application.

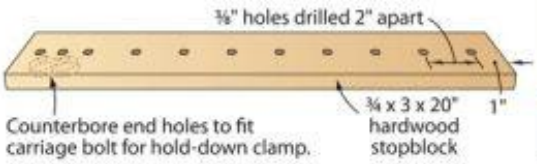
# Penn State Industries
**1-800-377-7297 • www.pennstateind.com/nodustwm**

## Finger-saving hold-down for small workpieces

I came up with this adjustable hold-down to keep my fingers safely out of the way while cutting small pieces on the mitersaw. First, I added a short section of T-track to both sides of my mitersaw table. Then I made the simple stopblock, shown *below*. Because it is exactly 20" long, simply add 20" to the size of the workpiece being cut and put the end of the block at that mark on the fence scale. I drilled ⅜" holes every 2" so I can use it with longer workpieces. To secure the hold-down clamp, I counterbored the end holes to accept a carriage bolt and fastened it in place with a star knob.

—*David Breen, Loudon, Tenn.*






Peachtree Woodworking Supply Inc.™
"Your One Stop Supply Shop"®
Find the woodworking items you need at...
ptreeusa.com
"I'll take one of those, and one of those, and that, and a couple of those, plus some of..."

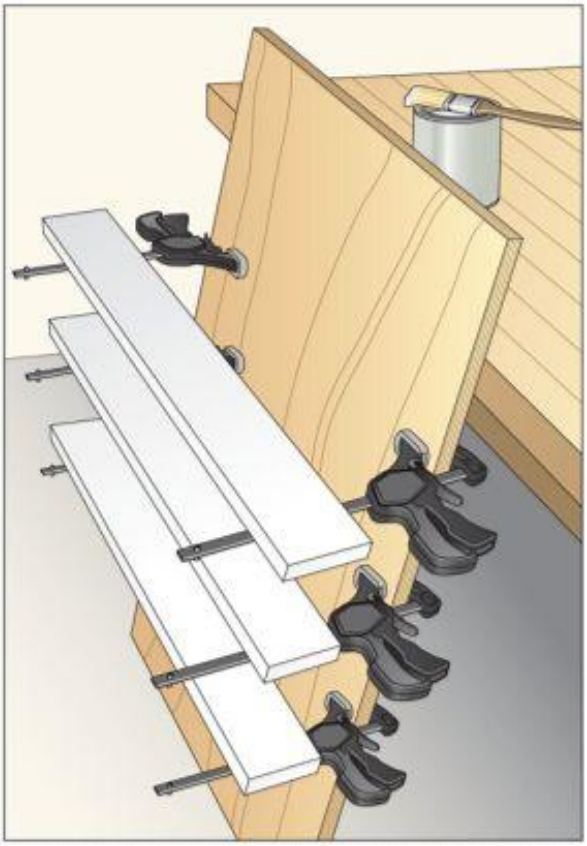
BESSEY · Carter Products · DELTA · DEWALT · Kreg · freud · NORTON · Peachtree

Over 5000 woodworking items to choose from! Shop online 24 hours a day.
Call Us Toll Free for a Free Catalog: 1-888-512-9069
Peachtree Woodworking Supply Inc.™, 6684 Jimmy Carter Blvd, Atlanta GA, 30071

## Instant drying rack for fast finishing

While painting some shelves recently, I ran out of space to stack drying boards. So I took a large scrap of plywood and attached one-handed bar clamps along the edges. In no time, I had an impromptu drying rack. Be sure to tilt it back a little when you set it aside. Otherwise the weight of your boards will topple it.

*—Rob Kurtz, Amherst, Ohio*



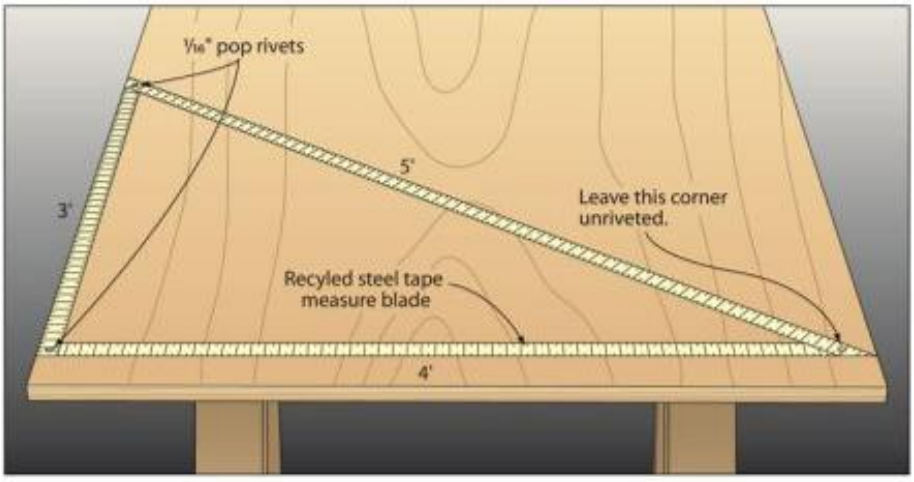
## "Pocket" square measures extra large

Your article "Don't Swear, Get Square" in issue 177 (July 2007) prompted me to send in this tip for a collapsible, square-checking triangle. All it takes is the tape from a broken tape measure and some 1/16" pop rivets.

The triangle shown here is cut to 3', 4' and 5', but you could make the sides any length so long as you maintain that 3-4-5 ratio. Tape each corner together and drill a 1/16" hole through both pieces at each intersection. Pop rivet two of the angles together, leaving the joints loose to allow rotation. For the third angle, insert the rivet into only one leg leaving the two sides unattached.

When checking a project or sheet of plywood for square, connect the legs of the open angle by loosely hooking the rivet into the hole. For easy storage, you can fold the triangle into a straight line, and roll it up.

*—Mark Thorsell, Golden Valley, Minn.*



STRONG
BOND
WITH LESS CLAMP TIME.
INCREDIBLY STRONG
GORILLA
100% TOUGH
WOOD GLUE
FOR THE TOUGHEST JOBS ON PLANET EARTH
Stronger Faster with Shorter Clamp-Time
Dries Natural Color – No Dyes
Ideal for Indoor/Outdoor Use
18 FL OZ (532 ML)
High strength with a shorter clamp time along with no dyes for a natural finish makes Gorilla Wood Glue ideal for your woodworking and building projects.
FOR THE TOUGHEST JOBS ON PLANET EARTH.®
GORILLATOUGH.COM
1-800-966-3458 Made in U.S.A.

# Wise Buys

## Our Editors Test Drill-Press Tables

### Why buy?

Most drill presses come with smallish cast-iron tables that, frankly, don't work well for woodworking. Besides having a 1" or smaller relief hole in the center, support gussets on the bottom make clamping workpieces or jigs difficult. In search of good aftermarket table alternatives, we tested six models and found that most left us scrambling to make up for their shortcomings. We do, however, recommend two factory-made models below, as well as one built in our own shop that we still use every day.

**RATING SYSTEM**

★★★★★ Top of the line ★★★★ Excellent quality ★★★ Solid performer for the price

### HARTVILLE TOOL, #46515, $140

**Editor rating:** ★★★★

**Editor test-drive:**

This large table has more features than any other. With four T-track slots in the table and two hold-down clamps, I found it easy to clamp almost any size workpiece. The 36"-long, 3¼"-tall aluminum fence has two T-slots on its face for mounting the stopblock, with adjustment screws on the back side to square it to the table. I like the cam-style fence clamps because the fence doesn't shift when you tighten the clamps as it can do with threaded knobs. The 13/16"-thick, melamine-coated MDF top proved flat, but the kit comes without hardware for mounting to the drill press. Following the instructions, I drove four screws with washers into the bottom through the table slots. The 5×6" particleboard insert sat below flush with the tabletop, resulting in tear-out on the bottom of workpieces. (I replaced it with a flush-fitting MDF panel.)

**To learn more:**

800-345-2396, hartvilletool.com

**—Tested by Bob Hunter, Tools & Techniques Editor**

4 years as an editor at *WOOD* magazine, 22 years of woodworking experience

### PEACHTREE WOODWORKING, #1015, $120

**Editor rating:** ★★★★

**Editor test-drive:**

If you don't have the time to build your own table, this model offers plenty of good features for a reasonable price. To start with, you get two aluminum hold-down clamps and a UHMW stopblock. The 2¾"-tall MDF fence sports a T-track along its 32" length, and mounts solidly to the table track with aluminum angle (although I had to shim it square to the table). The table itself is 2"-thick MDF with plastic laminate on both faces, rather than the thinner melamine coating on some. I found it quick to install and remove from my drill press with two threaded knobs that fit through the slots in my table.

**To learn more:**

888-512-9069, ptreeusa.com

**—Tested by Bill Krier, Editor-in-Chief**

22 years as an editor at *WOOD* magazine, 40 years of woodworking experience

### WOOD® MAGAZINE PLAN-BUILT, (ISSUE 156, JUNE/JULY 2004), $85

**Editor rating:** ★★★★★

**Editor test-drive:**

I might be a little prejudiced when it comes to this table—because I designed it—but it fulfills all of my needs, and for about half the price of manufactured tables. Two T-track slots in the table accommodate hold-down clamps as well as the fence; a third T-track helps me quickly position and clamp the microadjustable stopblock. The 3"-tall fence gives plenty of vertical support without being in the way of the quill-feed handles. Plus, it telescopes on each end for a maximum length of 48", and the table has replaceable center inserts. You'll invest a few hours making it, but the payoff is worth it.

Downloadable plan, $6.95:
woodmagazine.com/dptable
Hardware kit: #ADP-1, $65,
800-346-9663

**—Tested by Kevin Boyle, Senior Design Editor**

9 years as an editor at *WOOD* magazine, 23 years of woodworking experience

# WIFE APPROVED

**THE NEW SAWSTOP PROFESSIONAL CABINET SAW: AFFORDABLE SAFETY AND PERFORMANCE**

Listen up guys, your wife is going to love this saw — maybe even more than you do. First, it stops on contact with skin and prevents serious injuries. Second, it's an awesome saw — powerful, well-built, durable. Finally, it's priced about the same as other cabinet saws, so why not choose the one that also comes with peace of mind?

## GET YOUR FREE DVD TODAY

Go to **sawstop.com/wifeapproved** and we'll send a persuasive information kit, including a DVD that will close the deal.

SawStop

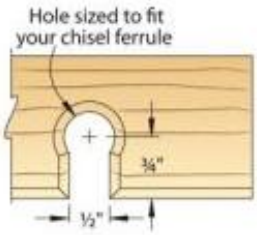
# Hold and Protect Chisel Rack

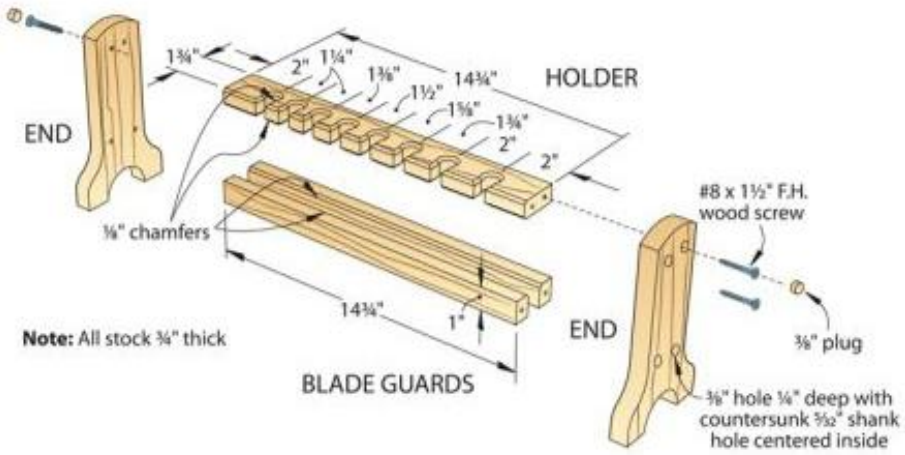
Whether you're cleaning mortises or squaring the corners of a picture-frame rabbet, this handsome accessory shields your chisels and keeps them close at hand. To create this rack, first measure the diameter of your chisel ferrules and then drill holes in scrap stock ⅛" larger than the measured diameters to test the fit. Adjust the hole sizes, if necessary, for a good fit. Drill the holes in the holder, cut from the front edge of the holder to the holes using a handsaw or bandsaw, and rout a chamfer along the edges (not ends) and holes of the holder.

Use the full-size **End Pattern** in the *WOOD Patterns*® insert to mark the outline and hole centerpoints for the ends. To simplify assembly, use four spacers as shown at *right*. For our particular chisels we used two 2¼"-long and two 3⅛"-long spacers, to keep the holder and blade guards level when gluing and screwing them between the ends.

***Note:*** We built this rack to fit a set of eight WoodRiver chisels from Woodcraft (item #147049). You may have to slightly vary the rack and hole dimensions to suit your chisels.

**SPACERS PROVIDE POSITIONING**



For a free video on sharpening chisels go to woodmagazine.com/sharpenvid

ROCKLER®
WOODWORKING AND HARDWARE
Create with Confidence™

# Easy box joints? Precisely.

Enjoy making clean, perfectly spaced 1/4", 3/8" and 1/2" box joints for jewelry boxes, drawers or any project where you need a solid 90° joint. This smooth-riding jig works on any router table with a 3/4" miter slot, making setup and execution easy and exact. Safe, precise and easy to use, this box joint jig will produce impressive decorative joints that are structurally solid.
Another innovative way Rockler helps you ***Create with Confidence.***

*Materials code: 168*

*For a store near you or free catalog visit* **Rockler.com** | **1-877-ROCKLER**

# The Ultimate Outdoor Wood

Photo courtesy: Radiance Wood Products

## No toxins? No plastic? No kidding. Thermally modified wood may be the best thing since sliced cedar.

The holy grail of outdoor woods: rot-resistant, weather-resistant, insect-resistant, strong, and dimensionally stable. And to make the quest more challenginge, let's add beautiful, non-toxic, and sustainable. Impossible, you say? Well take a look at thermally modified wood. That elusive and legendary perfect wood for outdoor projects might be closer than you think.

### Beyond kiln-drying

The idea of thermally modifying wood is nearly as old as toolmaking. Early hunters heated wooden spears over the fire to harden them. But it wasn't until the 1990s that Scandinavian wood processors and kiln manufacturers, such as Stellac Oy, took the process into the lab for closer scrutiny. The resulting technology has been employed for years in Europe, but is only recently making its way into North American retail markets via such companies as Radiance Wood Products (radiancewood.com), EcoVantage (ecoprem.com), Bay Tree Technologies (purewoodproducts.com), and Northland Forest Products (cambiawood.com).

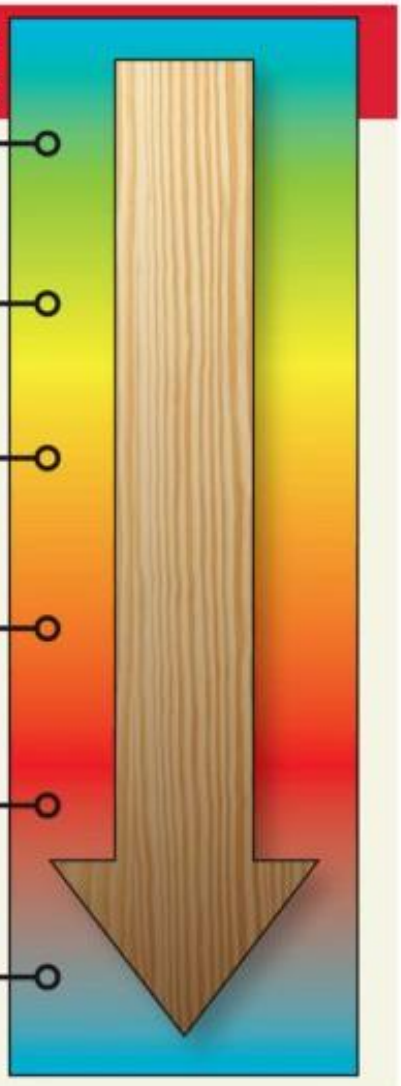
The thermal modification process (see illustration *at right*) starts where kiln-drying leaves off, subjecting the wood to temperatures near 500° F. This "bakes" the sugars in the wood, making it unpalatable to rot-inducing microbes and wood-munching insects. Components in the wood's cell walls that normally absorb and release moisture become permanently water-insoluble during thermal modification. Robbed of ready moisture, the wood becomes not only less vulnerable to decay by biodegrading, but also more dimensionally stable and resistant to warping. And, just like those spears of old, the wood hardens as the cell structure is transformed.

The end-product is a lightweight, strong, durable, stable, and chemical-free wood. The process imparts a rich brown color that permeates the board and a pleasantly sweet, baked smell.

The wood is machined into deck boards, siding, or dimensional lumber after undergoing the process, and most of its tendency to warp gets left behind.

*continued on page 22*

### The Thermal-modification Process



**Kiln-dried wood with a moisture content ranging from 14–19% enters the computer-controlled thermal-modification kiln.**

**Initial heating:** The temperature inside the kiln rises to 212° F, the boiling point of water.

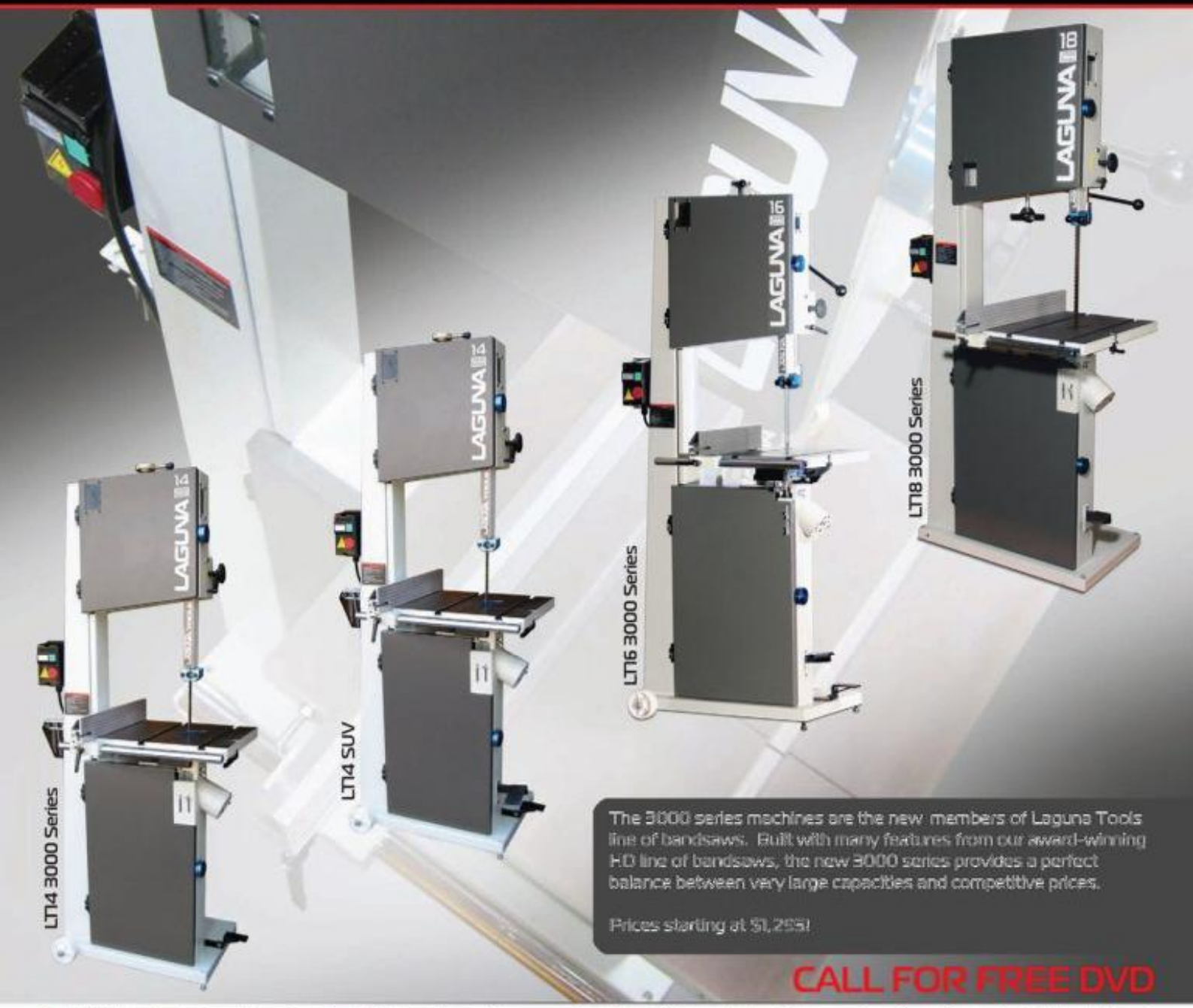
**Preconditioning and drying:** The heat continues and steam is introduced to slowly bring the drying wood to a uniform 7–8% moisture content.

**Thermal Modification:** As the temperature of the kiln boosts to 480° F, the increased heat "bakes" the sugars and tannins in the wood making them inedible to microbes and insects. The wood darkens and hardens.

**Conditioning:** Steam once again is introduced to stabilize the wood and prevent it from drying completely in the high heat.

**Cooling:** Computers slowly lower the temparature of the kiln to minimize stresses on the wood as it cools. Only 24–48 hours after it entered, the wood is ready to be removed.

# AWARD-WINNING DESIGN




The 3000 series machines are the new members of Laguna Tools line of bandsaws. Built with many features from our award-winning HD line of bandsaws, the new 3000 series provides a perfect balance between very large capacities and competitive prices.

Prices starting at $1,295!

## CALL FOR FREE DVD

**TABLESAW**

Platinum Series Dovetail

3-hp TEFC Leeson Motor
10-in. Blade Capacity
50-in. Rip Capacity
Triple V-Belt Drive System

**JOINTER**

Platinum Series 8-in.

2-hp TEFC Motor
1/8-in. Cut Capacity
Shear-Tec Spiral Cutterhead

**PLANER**

Platinum Series 20-in.

5hp TEFC Motor
25-in. x 20-in. Table
Shear-Tec Spiral Cutterhead

**PANELSAW**

Pro Series 6 Sliding Table

4-hp TEFC Motor
1/2-hp Scoring Motor
67-in. Cross Cut Capacity
10-in. or 12-in. Blade Capacity

THRIVING ON INNOVATION

LAGUNA TOOLS

17101 Murphy Avenue, Irvine, CA, 92614

www.lagunatools.com

Se Habla Español

800.234.1976

949.474.1200

## Environmental impact

The thermal-modification process works on any species of wood, but most manufacturers utilize Southern Yellow Pine because of its low price and sustainability. The chemical-free process leaves behind no chemical waste at the kiln and nothing toxic to leach from the wood into your backyard soil.

One manufacturer, Radiance Wood Products, carries the green aspect a step further by adding a resin-based, volatile-organic-compound-free finish called One TIME in the factory. Bond Distributors, maker of One TIME recommends refinishing with their product within seven years.

Thermally modified wood weighs so little, a truck can hold more than two times the number of board feet compared to pressure-treated wood, saving fuel and reducing emissions. (Although the latter is offset somewhat by the increased fuel necessary to heat the kilns.)

## Waiting for the other shoe to drop?

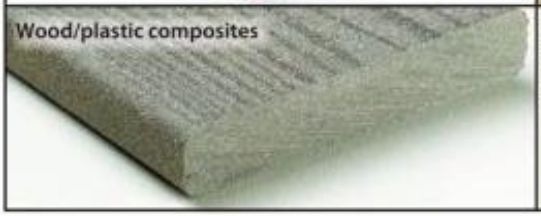
Here it is, but it's more like a moccasin than a work boot: The process that leaves the wood harder also reduces its splitting resistance; several manufacturers recommend predrilling screw holes, especially near the ends of boards. The wood becomes more vulnerable to UV light, fading to a silver-gray faster than unmodified wood, so refinishing is necessary every year or two.

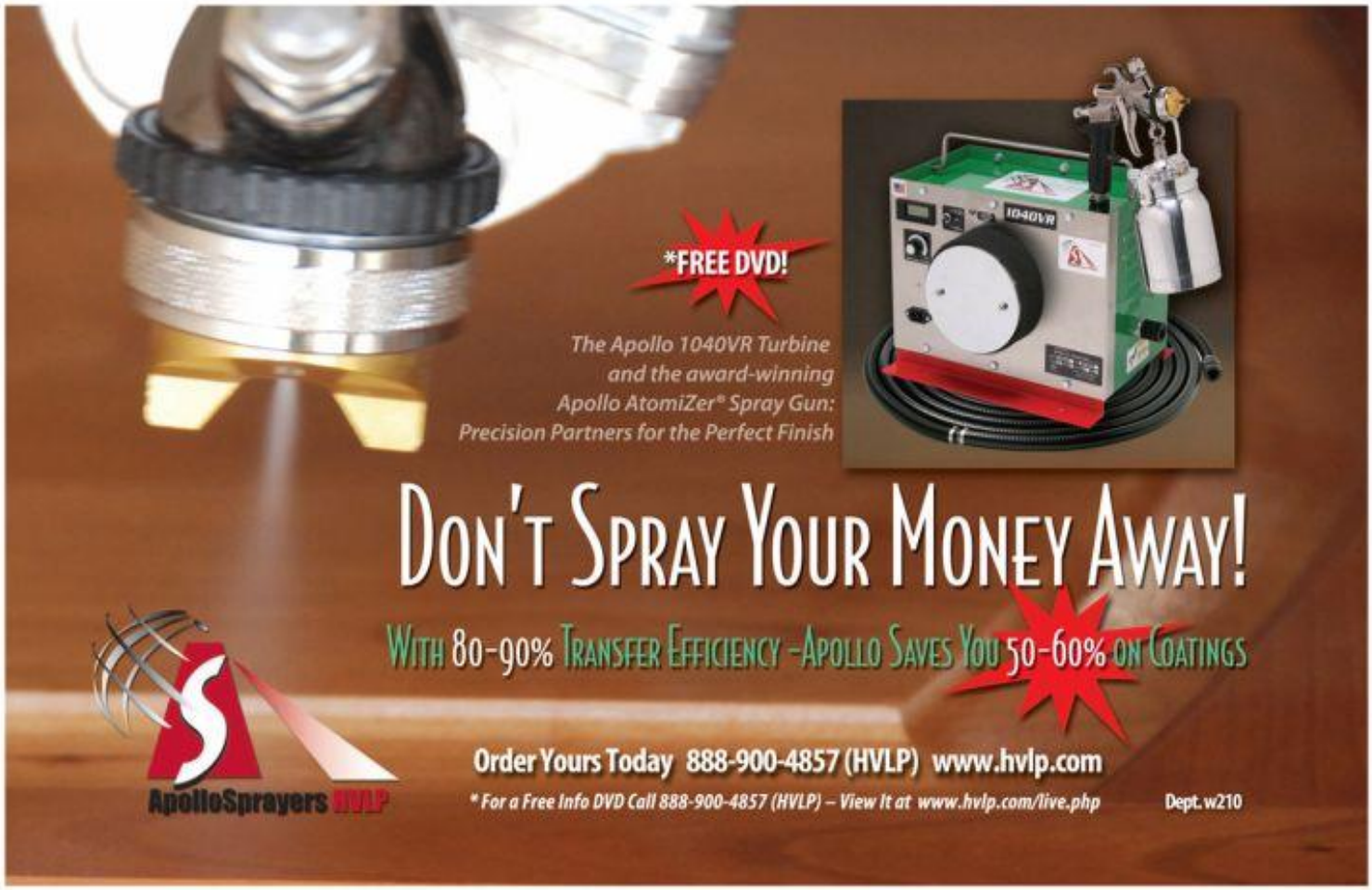
One other caveat: Because the process is fairly new, most products have not yet been certified for ground contact. So for now, you'll still need to build your deck framework with pressure-treated lumber. That's why most manufacturers are focusing their product lines on 5/4 deck boards, posts, balusters, and railings, rather than standard dimensional lumber.

## Availability and cost

Currently, thermally modified wood is making its way into lumber yards and specialty decking stores, with limited inroads into home centers. Its cost lands somewhere between that of cedar decking and composites. Warranties range from 20 to 30 years. Watch for increased availability and possibly lower prices as companies rev up production and distribution.

## How thermally modified wood stacks up against other outdoor materials

| Material | Pros | Cons | Cost per 1x6 Lineal Foot |
|---|---|---|---|
| Thermally modified wood | Hard, lightweight, stable, rot-resistant, insect-resistant, and chemical-free. | Care must be used to avoiding splitting when driving fasteners, and it grays quickly if not regularly finished. Limited availability. | $2 |
| Pressure-treated pine | Strong, inexpensive, and readily-available, pressure-treated wood has a long and proven track record of impressive rot- and insect-resistance. You can buy it certified for ground contact. | Pressure-treating wood saturates it with water-based preservatives, leaving it heavy, wet, and warp-prone. The chemicals accelerate corrosion in fasteners and necessitate special handling procedures. | $1 |
| Western red cedar | Even-grained with some natural decay-resistance. Widely available in the West and Midwest. Look for comparable redwood in the West and cypress in the Southeast. | Tannin bleeding can make finishing problematic without some additional prep work. Care must be used to avoiding splitting when driving fasteners. | $1–2 |
| White Oak | Dense, strong white oak has a decay-resistant, moisture-resistant heartwood and it accepts finishes readily. | You won't find white oak in dimensional lumber for deck-building, so save it for benches, arbors, and chairs. Heavy. | $2 |
| Ipe | Super-dense, strong, and stable, ipe can last 40 years or more even if left untreated. It resists warping, cracking, decay, even denting. | Expensive and sometimes hard to find, ipe's hardness also accelerates dulling of tools, blades, and bits. Heavy. | $3–4 |
|  Wood/plastic composites | Rotproof, defect-free, dimensionally stable, and widely available in home centers. No splintering. | It lacks rigidity so it can't be used for structural purposes. Weighs more than most woods and can experience expansion, especially along the length in hot weather. In the sun, becomes hot to the touch. | $2–3 |


*FREE DVD!
The Apollo 1040VR Turbine
and the award-winning
Apollo AtomiZer® Spray Gun:
Precision Partners for the Perfect Finish
1040VR
DON'T SPRAY YOUR MONEY AWAY!
WITH 80-90% TRANSFER EFFICIENCY -APOLLO SAVES YOU 50-60% ON COATINGS
ApolloSprayers HVLP
Order Yours Today 888-900-4857 (HVLP) www.hvlp.com
* For a Free Info DVD Call 888-900-4857 (HVLP) – View It at www.hvlp.com/live.php
Dept. w210

See more than

# 1,100+ plans

at woodmagazine.com/plans

Gem of a Jewelry Box
Plan DP-00476 $5.95

Arts & Crafts Bed
Plan DP-00424 $9.95

Blanket Chest
Plan DP-00734 $12.95

Download woodworking plans for the prices listed, or view larger images of the and 1,100 more at:
woodmagazine.com/plans
To have paper plans mailed directly to you (add $3 per plan S+H), call **toll-free: 888-636-4478**.
Please have your credit card available.

WD0310

# The Woodworking Shows

Get **FREE** stuff just for showing up!

Coupon required for free items. Visit online to download.

## The Hands-on Show for Woodworking and DIY'ers

## Coming Soon To Your Town

Baltimore, MD *Jan 8-10*
New England *Jan 8-10*
Columbus, OH *Jan 15-17*
Indianapolis, IN *Jan 22-24*
Atlanta, GA *Jan 29-31*
Milwaukee, WI *Feb 5-7*
St. Louis, MO *Feb 12-14*
Kansas City, KS *Feb 19-21*
Somerset, NJ *Feb 19-21*
Detroit, MI *Feb 26-28*

*Visit online for more details and our full schedule.*

**BE A SHOW-OFF!**

Enter your best work in our Show-Off Contest for a chance to win a Delta Unisaw!

*register online*

Steve Yauch
Dallas ShowOFF Winner

**Good To Know**
*new FREE education programs*

**Good To Try**
*test-drive tools before you buy*

**Good To Buy**
*show exclusive discounts*

www.TheWoodworkingShows.com 800-826-8257

# The Complete Routing Solution

**Check out the comprehensive line of Kreg Precision Routing Accessories.**

**Precision Router Stop**
Repeat the same incredibly accurate cut, again and again.

**True-FLEX™ Featherboards**
Ensure safe, fast, and accurate cuts.

**Precision Router Table**
Self-squaring fence, steel reinforced MDF top, plus much more.

**Router Table Switch**
Add safety and convenience to your table.

GREAT ACCESSORIES

**Precision Router Table Lift**
Quick and easy height adjustment and bit-switching.

**Precision Setup Bars**
Three unique ways to ensure project precision.

**Precision Router Table Casters**
Add mobility to your router table!

NEW

**Beaded Face-Frames the Kreg Way!**

No more ripping, mitering, nailing, or gluing. Thanks to the all-new Kreg Precision Beaded Face-Frame System you can build beautiful beaded face-frames on your router table.

**See the whole story at www.kregtool.com.**

Kreg

www.kregtool.com | 800.447.8638

# 4-WAY MONEY MAKER

MOLDS • PLANES • SANDS • SAWS

Own a 4-in-1 MOLDING FACTORY!

Quick-Change Molding Head

Commercial-Duty Thickness Planer

Power-Feed Drum Sander

Sand Ripsaw Attachment

***Now, turn a $5.00 rough board into $75.00*** worth of high-dollar molding in just minutes. Make over 500 standard patterns, curved molding, tongue & groove, picture frame stock, any custom design. **QUICKLY CONVERTS** from Molder/Planer to Drum Sander or powerfeed Multi-Blade Ripsaw. Made in U.S.A. 5-Year Warranty. Choose from 12", 18" or 25" models.

***NEW!* SHAPE 3 SIDES IN 1 PASS!**

***NEW 3-Side Molding System*** turns your Woodmaster into a POWERFUL 3-SIDE MOLDER that efficiently & AFFORDABLY cuts T&G flooring, paneling, & more!

**NEW!**
*3-Side Molding System*

- *Shape 3 sides per pass!*
- *Over 500+ Molding Patterns!*
- *RISK FREE 30-Day Trial Offer!*
- *Highest Profit: MAKE CURVED MOLDING!*

Get Your FREE DVD & BUSINESS STARTER KIT!

**CALL TOLL FREE 1-800-821-6651** Ext. P348

Woodmaster Tools, Inc. Dept. P348, 1431 N. Topping Ave., Kansas City, MO 64120 www.woodmastertools.com

Liquid stain blotches bare pine, but both types of wood conditioner leave an even color.

# Avoid (or fix) Blotchy Stain

Don't lose your project to a motley mess at finishing time. There's more than one way to achieve even color.

Blotching happens when areas of varying wood density absorb liquid stain differently, resulting in an unevenly stained surface that detracts from the natural beauty of the grain. Some woods, such as oak and walnut, absorb liquid stain evenly. On pine, cherry, maple, poplar, and birch, however, spongy areas soak up more liquid—and more color—than dense areas.

Any blotch-prevention program starts with evenly sanding to 180 grit on face grain, and to 220 grit on end grain. If you use a random-orbit sander, follow up by hand-sanding with the grain using the same final grit.

After sanding, wipe all surfaces with mineral spirits and inspect for scratches or sander swirls. Once those are gone, apply a gel stain or equalize the wood density with a washcoat. Choose the gel stain option if you want an easy solution straight from the can with predictable color. But go for the washcoat if you want absolute protection against blotching or plan to use a water-based stain.

## More on gel stains

Unlike deep-penetrating liquid stains, gel stains hold their dye in suspension [**Photo A**] so it can't oversaturate absorbent areas of the wood. Depending on the formula, however, some gel stains still produce high contrast between earlywood and latewood in pine [**Photo B**].

Before applying gel stain, thoroughly mix any liquid at the top of the can back into the gel. Wipe on stain generously but evenly. Allow the stain to sit for the time recommended by the manufacturer—usually about three minutes—and then wipe off the surplus, working with the grain.

Don't expect gel stains to get you out of sanding end grain to a finer grit. A rough surface there still traps more stain pigment particles than on other surfaces.

## Clean up with a washcoat

Whether you use a store-bought wood conditioner or make your own from varnish and mineral spirits (more on that later), these so-called "washcoats" work the same: Solvent carries a small amount of varnish extra-deep into the absorbent, blotch-prone areas, partially sealing them. This equalizes the absorbency so liquid stain penetrates more evenly without blotching [**Photo C**].

*continued on page 28*

**YOU THINK WOOD ACTS SPONGY?**

Just as on wood, liquid stain quickly penetrates deep into the *left* sponge, while gel stain rests on the surface without being absorbed.

# HARBOR FREIGHT TOOLS

**Quality Tools at Ridiculously Low Prices**

## FACTORY DIRECT TO YOU!

How does Harbor Freight Tools sell high quality tools at such ridiculously low prices? We buy direct from the factories who also supply the major brands and sell direct to you. It's just that simple! Come see for yourself at one of our 330 STORES NATIONWIDE and use this 20% OFF Coupon on any of our 7,000 products. We stock Automotive products, Shop Equipment, Hand Tools, Tarps, Compressors, Air & Power Tools, Material Handling, Woodworking Tools, Welders, Tool Boxes, Outdoor Equipment, Generators, and much more.

**NOBODY BEATS OUR QUALITY, SERVICE AND PRICE!**

## WHY WE HAVE 10 MILLION SATISFIED CUSTOMERS:

- √ We Buy Factory Direct and Pass the SAVINGS on to YOU!
- √ Shop & Compare Our Quality Brands Against Other National Brands
- √ 7000 Tool Items In-Stock!
- √ NO HASSLE RETURN POLICY
- √ Family Owned & Operated

**LIFETIME WARRANTY**
ON ALL HAND TOOLS!

SUPER COUPON!

## 20%OFF ANY SINGLE ITEM!

Bring this coupon and Save 20% on one single item purchased at Harbor Freight Tools. Cannot be used with any other discount or coupon. One coupon per purchase. One coupon per customer. Coupon not valid on prior purchases or purchase of gift cards or purchase of extended service plans. Offer good on in-stock merchandise only. Savings discount percentage off Harbor Freight Tools current prices, including sale prices. This coupon cannot be duplicated in any manner including photocopies and computer printouts. Original coupon must be presented in order to receive the discount. All Campbell Hausfeld products are excluded from this offer. This offer is not valid on food or beverage items sold in our retail stores. Valid only in Retail Stores through 5/19/10.

99395279

**See HarborFreightusa.com/Wood for additional SUPER COUPONS**

SUPER COUPON!

CHICAGO Electric Power Tools

### 10" SLIDING COMPOUND MITER SAW

Item 98199 shown

LOT NO. 98199/90891/96697

SAW BLADE INCLUDED!

**$79.99**

REGULAR PRICE $139.99

**SAVE $60**

95137691

HARBOR FREIGHT TOOLS - LIMIT 1

These valuable coupons are only good when presented at your nearest Harbor Freight Tools store. Offer Ends 5/19/10.

Coupons valid in Retail Store Only. Coupon not valid on prior purchases. Coupon cannot be bought, sold, or transferred. This coupon cannot be duplicated in any manner including photocopies and computer printouts. Original coupon must be presented in order to receive the discount.

SUPER COUPON!

### 1500 WATT DUAL TEMPERATURE HEAT GUN

CHICAGO Electric Power Tools (572°/1112°)

LOT NO. 96289/ 66001

**$7.99** REG. PRICE $19.99

**SAVE 60%**

Item 96289 shown

28162378

HARBOR FREIGHT TOOLS - LIMIT 1

These valuable coupons are only good when presented at your nearest Harbor Freight Tools store. Offer Ends 5/19/10.

Coupons valid in Retail Store Only. Coupon not valid on prior purchases. Coupon cannot be bought, sold, or transferred. This coupon cannot be duplicated in any manner including photocopies and computer printouts. Original coupon must be presented in order to receive the discount.

SUPER COUPON!

LOT NO. 67256

### MULTIFUNCTION POWER TOOL

CHICAGO Electric Power Tools

**$34.99**

REG. PRICE $59.99

**SAVE 41%**

36718419

HARBOR FREIGHT TOOLS - LIMIT 1

These valuable coupons are only good when presented at your nearest Harbor Freight Tools store. Offer Ends 5/19/10.

Coupons valid in Retail Store Only. Coupon not valid on prior purchases. Coupon cannot be bought, sold, or transferred. This coupon cannot be duplicated in any manner including photocopies and computer printouts. Original coupon must be presented in order to receive the discount.

SUPER COUPON!

### 60" SOLID OAK WORKBENCH

Windsor Design®

LOT NO. 93454

Tools sold separately.

**$139.99** REG. PRICE $199.99

**SAVE $60**

21814025

HARBOR FREIGHT TOOLS - LIMIT 1

These valuable coupons are only good when presented at your nearest Harbor Freight Tools store. Offer Ends 5/19/10.

Coupons valid in Retail Store Only. Coupon not valid on prior purchases. Coupon cannot be bought, sold, or transferred. This coupon cannot be duplicated in any manner including photocopies and computer printouts. Original coupon must be presented in order to receive the discount.

SUPER COUPON!

CENTRAL MACHINERY

### 4" x 36" BELT/ 6" DISC SANDER

LOT NO. 93981/97181

Item 93981 shown

**SAVE 44%** **$49.99** REG. PRICE $89.99

9702943

HARBOR FREIGHT TOOLS - LIMIT 1

These valuable coupons are only good when presented at your nearest Harbor Freight Tools store. Offer Ends 5/19/10.

Coupons valid in Retail Store Only. Coupon not valid on prior purchases. Coupon cannot be bought, sold, or transferred. This coupon cannot be duplicated in any manner including photocopies and computer printouts. Original coupon must be presented in order to receive the discount.

SUPER COUPON!

CENTRAL MACHINERY

### 2 HP INDUSTRIAL 5 MICRON DUST COLLECTOR

LOT NO. 97869

**$139.99**

**SAVE $110**

REGULAR PRICE $249.99

61066483

HARBOR FREIGHT TOOLS - LIMIT 1

These valuable coupons are only good when presented at your nearest Harbor Freight Tools store. Offer Ends 5/19/10.

Coupons valid in Retail Store Only. Coupon not valid on prior purchases. Coupon cannot be bought, sold, or transferred. This coupon cannot be duplicated in any manner including photocopies and computer printouts. Original coupon must be presented in order to receive the discount.

SUPER COUPON!

LOT NO. 97524/40116

### 18 GAUGE 2-IN-1 NAILER/ STAPLER

Item 97524 shown

WE CARRY A FULL LINE OF FASTENERS!

CENTRAL PNEUMATIC CONTRACTOR SERIES

**$14.99** REG. PRICE $29.99

**SAVE 50%**

33646944

HARBOR FREIGHT TOOLS - LIMIT 1

These valuable coupons are only good when presented at your nearest Harbor Freight Tools store. Offer Ends 5/19/10.

Coupons valid in Retail Store Only. Coupon not valid on prior purchases. Coupon cannot be bought, sold, or transferred. This coupon cannot be duplicated in any manner including photocopies and computer printouts. Original coupon must be presented in order to receive the discount.

SUPER COUPON!

LOT NO. 46807

### 12" RATCHET BAR CLAMP/ SPREADER

REG. PRICE $6.99 **$1.99**

**SAVE 71%**

64103518

HARBOR FREIGHT TOOLS - LIMIT 4

These valuable coupons are only good when presented at your nearest Harbor Freight Tools store. Offer Ends 5/19/10.

Coupons valid in Retail Store Only. Coupon not valid on prior purchases. Coupon cannot be bought, sold, or transferred. This coupon cannot be duplicated in any manner including photocopies and computer printouts. Original coupon must be presented in order to receive the discount.

**We Will Beat Any Competitor's Price Within 1 Year Of Purchase!**

**330 STORES NATIONWIDE**

**TO FIND THE STORE NEAREST YOU CHECK:**
**1-800-657-8001**
**or HarborFreightusa.com/Wood**

You can use an oil-based washcoat beneath oil-based or water-based stain [**Photo D**] once it dries thoroughly. To create your own, mix two parts of the varnish you'll use as a top coat with eight parts mineral spirits. However, don't attempt to thin water-based finish to make your own washcoat. Stick with the store-bought types.

Now the downsides: Partially filling the pores with a washcoat leaves fewer places where stain pigments can catch. That produces a lighter color than on wood with no washcoat. Washcoats also require some experimentation to prevent blotching while still coloring the wood.

## Application pointers

Apply the washcoat generously to a test board until the spongy areas and end grain become saturated. When these areas stop pulling in liquid, wipe the surface thoroughly to remove the excess. Allow an oil-based washcoat to dry overnight and water-based washcoat to dry for three hours.

Conditioner labels may say you can apply stain sooner than that, but resist the temptation. You'll risk dissolving the washcoat with the solvent in the stain. If blotches appear, gradually add varnish to the homemade mix or apply additional coats of conditioner until it blocks the blotch. Don't exceed one part varnish to two parts mineral spirits.

Lightly sand the wash-coated surface using the same grit you used on the unfinished wood. Then stain according to the manufacturer's instructions.

## Too late to prevent? Hide those blotches

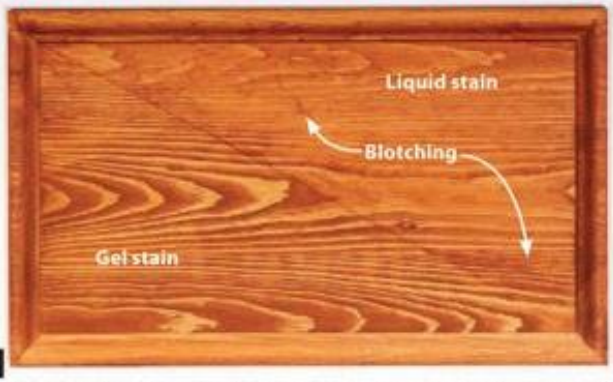
If despite your best efforts a stained surface still shows blotching, don't give up. Conceal light blotching with a *glaze*. That's any thick stain applied over a film finish covering the blotched stain.

Begin by applying a full-strength "sealer" coat of the same finish you'll use for your top coats. After the finish dries, lightly roughen it in the direction of the grain using 0000 steel wool to provide scratches where pigment particles in the glaze can catch. Then apply an even coat of oil-based gel stain as your glaze.

If you only need a small amount of glaze to fix the blotching problem, wipe off the excess stain as you would on bare wood, allow it to dry, and apply two topcoats [**Photo E**].

If you need a darker glaze to cover up the blotchy areas, use just the tip of a dry, natural-bristle brush to distribute the stain (instead of wiping it off) until it's an even color. Wipe the brush off frequently as you work. If you remove too much, restain that area and start over. If you make a mistake, wipe the surface before the glaze dries using a cloth soaked in mineral spirits; then try again.

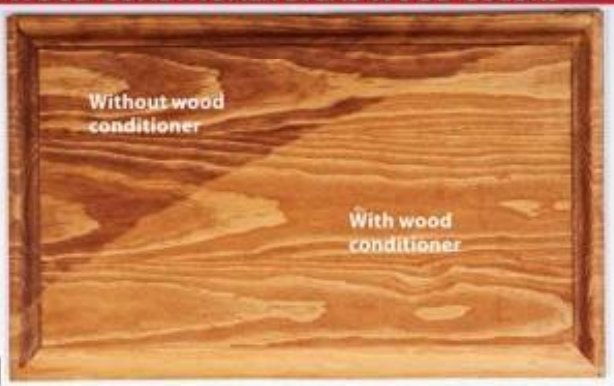
GEL STAIN HIGHLIGHTS GROWTH RINGS IN PINE




B

Gel stain produced less blotching in pine than the liquid version of the same color, but still produced high contrast between growth rings.

WOOD CONDITIONER EVENS WOOD COLORS




C

A washcoat (a store-bought wood conditioner) reduced the growth ring contrast caused by a light walnut liquid stain on this pine panel.

CONDITIONER HELPS WATER-BASED STAINS

D

A water-based wood conditioner washcoat keeps water-based stain from soaking into pine and drying before you can wipe off the excess.

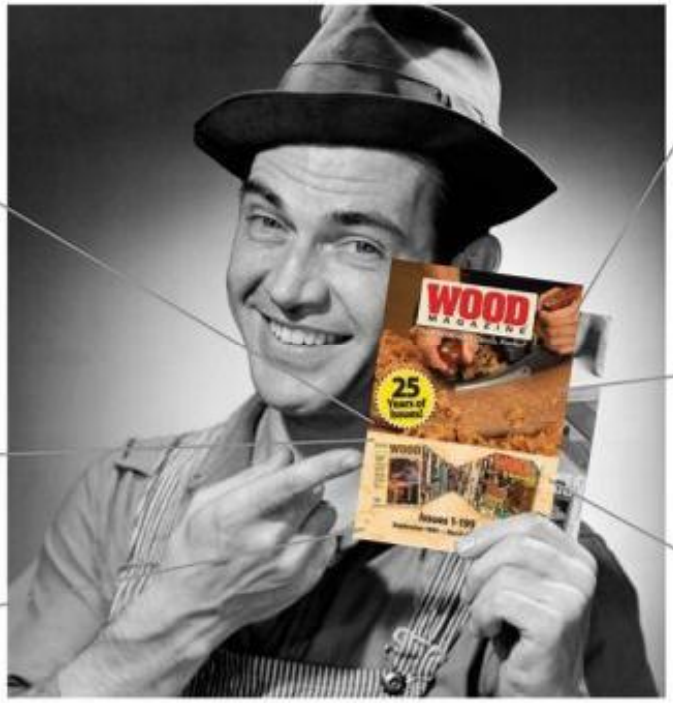
GLAZE DEEPENS COLOR EVENLY

E

Gel-stain glaze darkens the right side of this cherry panel without increasing the contrast caused by blotches.

# Didn't get the gift you *really* wanted?

## You can still get 25 Years of WOOD® Magazine on 5 info-packed DVDs!




About the size of a paperback, yet holds all 195 issues

Quickly find what you're looking for with the built-in index

Includes issues that have been out of print for years

Save hundreds of dollars versus buying back issues

Comprehensive: Includes every single issue for the past 25 years

Compatible with Mac and PC

Where else are you going to find more than...

**295** Furniture Projects

**525** Tool Reviews and features

**230** Shop Projects

**1,515** Shop Tips

**900** Weekend Projects

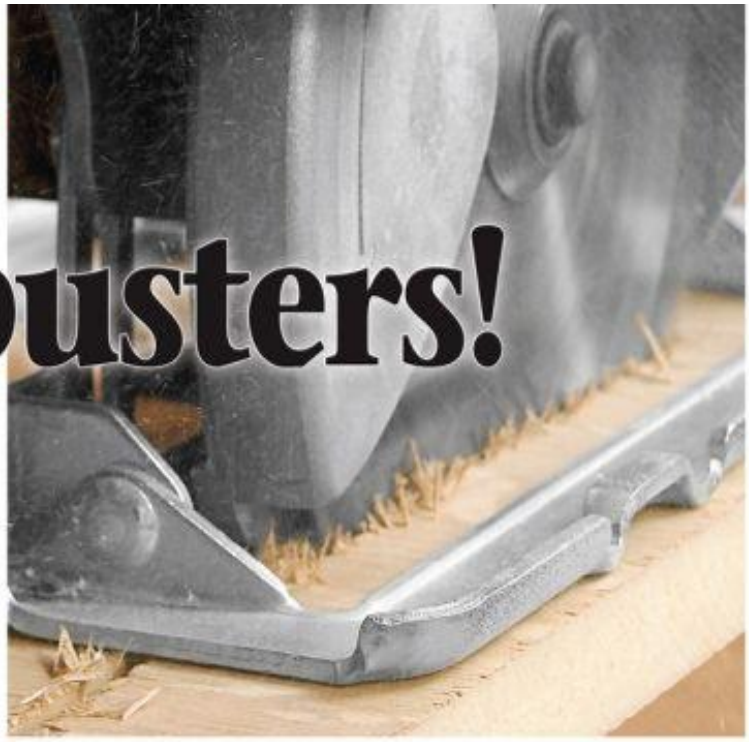
**765** Skill-Building Techniques

Order online at **woodmagazine.com/DVDlibrary** or by phone at **888-636-4478**.

WD0310

## Fixing Workshop Goofs

# Splinterbusters!



**Before you trash that tattered plywood, try these fixes to tame the tear-out.**

Whether it comes from using a dull blade, the wrong blade, or a misaligned tablesaw fence, grain tear-out can haunt your crosscuts in veneered sheet goods. Here are three ways to salvage ragged edges.

### Fix #1: Cover it

If you don't mind altering your project design, hiding the tear-out behind molding proves the easiest and quickest fix. Use off-the-shelf molding or rout your own in matching stock. Secure it to the assembled project with glue and pins or brads—no one will be the wiser!

HIDE TORN GRAIN WITH MOLDING

### Fix #2: Wrap it up

This fix might not look good for some project parts, such as case sides, but for tops, bottoms, and shelves you can "wrap" the workpiece with solid-wood edging. Trim off the tear-out by first making a ⅛"-deep scoring cut to trim the veneer cleanly, and then raising the blade to cut off the scrap end. Next, glue matching hardwood strips around the perimeter to bring the panel to final dimensions.

TEAR-OUT THAT'LL TEAR YOU UP

CUT IT CLEANLY; THEN EDGE IT

### Fix #3: Highlight it

Use a small cove or chamfer bit to rout away the torn-out grain. Sand; apply a sanding sealer to the entire workpiece, reveal included; and sand smooth. Then use a cotton swab to apply a stain darker than the stain used on the rest of the project to the reveal. This creates a shadow effect that becomes a design element.

REPLACE TEAR-OUT WITH REVEAL

MATCH WITH ADJACENT PROFILES

Wood River

BUY BOTH & SAVE!
(150158) $62.95

Wood River
LED Dual Power Shop Light
- 7 LED Light
- Great For Scroll Saws, Bandsaws, Drill Presses, Reading And More

149727 - reg. $29.99

Wood River
LED Shop Light with Magnifying Glass Head 150159
- 4", 3x Magnifying Glass Lens
- 14 Evenly Spaced LED's For Lighting To See Finest Details
- Useful For Carving, Painting, Wood Burning, Lure Tying, Pysanky Or Any Task Requiring Fine Detailing

150159 - reg. $39.99

Both Lights Feature:
- Use AAA Batteries (Not Included) Or It Can Be Plugged Into Any Standard 110V Outlet, Comes With 110V Transformer And Base
- Magnetic Base With Additional 2½" Capacity Clamp Base
- 10" Gooseneck That Can Be Bent In Any Direction And Stays Where It's Pointed

Available Exclusively At Woodcraft!

For A Free Catalog Or To Find Your Local Woodcraft Store, Visit woodcraft.com Or Call 800-225-1153. 10W620



Forrest Blades

For building cabinets and fine furniture, nothing beats Forrest saw blades.

Craftsmen appreciate the way our blades deliver smooth, quiet cuts *without* splintering, scratching, or tearouts. They know our unique grade C-4 micrograin carbide, proprietary manufacturing process, and hand straightening produce exceptional results. In fact, independent tests rate us #1 for rip cuts and crosscuts.

*"From the first cut on, I realized that this blade was a bargain at any price! Nothing else I have cuts comparably."* Calvin Brodie, Spanaway, WA

Order from any Forrest dealer or retailer, online, or by calling directly. Our blades are manufactured in the U.S.A. and backed by our *30-day, money-back guarantee.*

Code WM

Forrest Quality Shows

**Woodworker II**—Best rated, all-purpose blade for rips and crosscuts.

**Chop Master**—Perfect for tight, perfectly cut miter joints without splinters.

FORREST
The First Choice of Serious Woodworkers Since 1946

www.ForrestBlades.com
1-800-733-7111
(In NJ, call 973-473-5236)

© 2010 Forrest Manufacturing

Woodworker II — Fine Woodworking — Editors' Choice Best Overall
Chop Master — Woodshop News — 2007
Duraline Hi-AT — Woodshop News — 2007
Dado King — Wood Magazine — Top Tool 2008



KLOCKIT®

Leading Supplier To WoodWorkers For 38 Years!

Call Today For Your FREE Catalog!

www.klockit.com

Klockit Offers The Largest Selection Of Clock:
Movements · Dials · Hands · Kits · Plans · Hardware & Much More!

1-800-556-2548 Dept: WD210

Follow Klockit on:

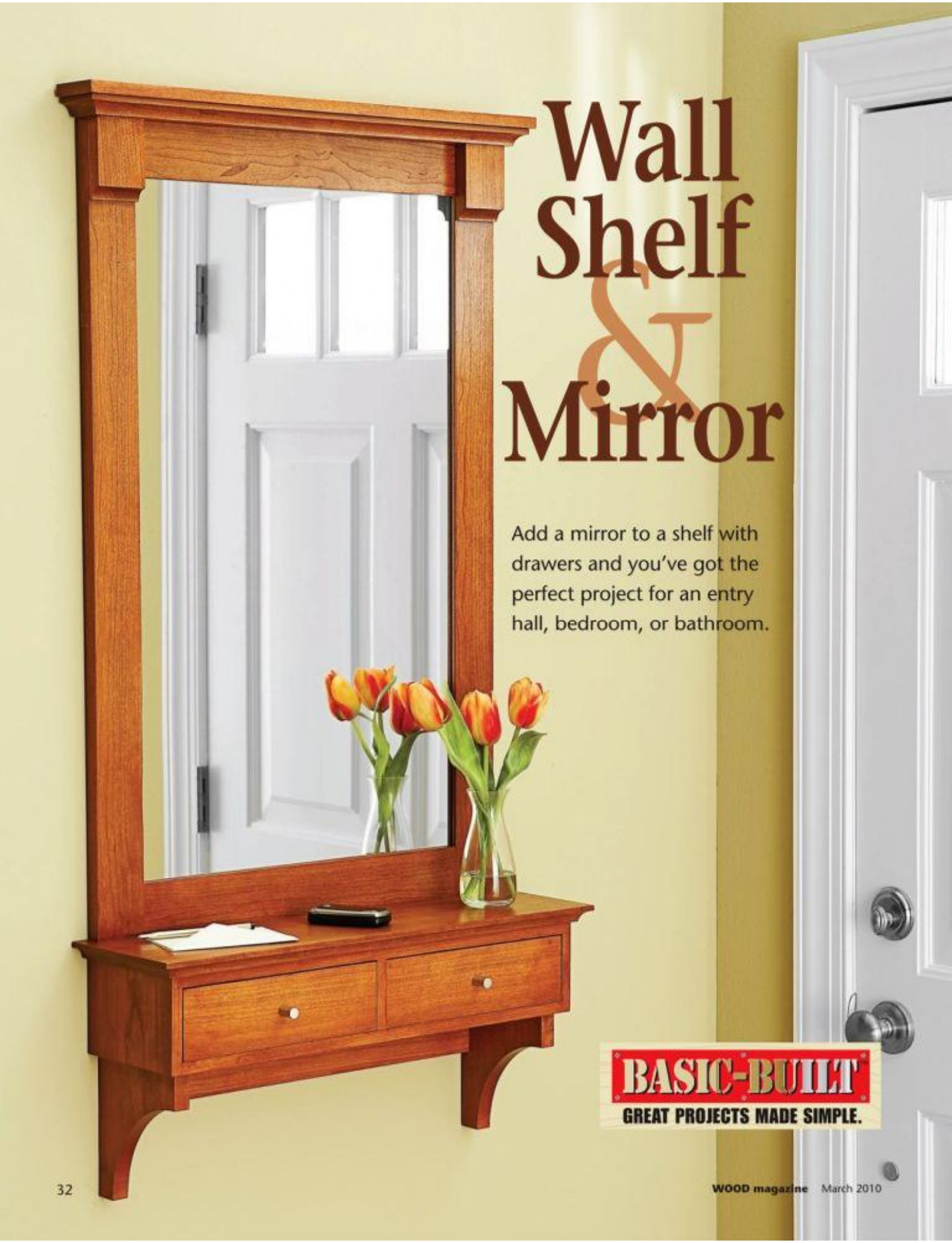


OSBORNE Wood Products, Inc.

*High Quality Wooden Components available in a variety of design styles.*

866.849.8876

WWW.OSBORNEWOOD.COM



# Wall Shelf & Mirror

Add a mirror to a shelf with drawers and you've got the perfect project for an entry hall, bedroom, or bathroom.

BASIC-BUILT
GREAT PROJECTS MADE SIMPLE.

## WHAT YOU'LL NEED

- **Materials:** Cherry (½"- and ¾"-thick stock available at many home centers) and ¼" birch plywood.
- **Bits:** ½" cove router bit, ½" straight router bit.

When you gaze into this mirror, you won't believe the person looking back at you built such a stylish project using only basic tools and commonly available lumber.

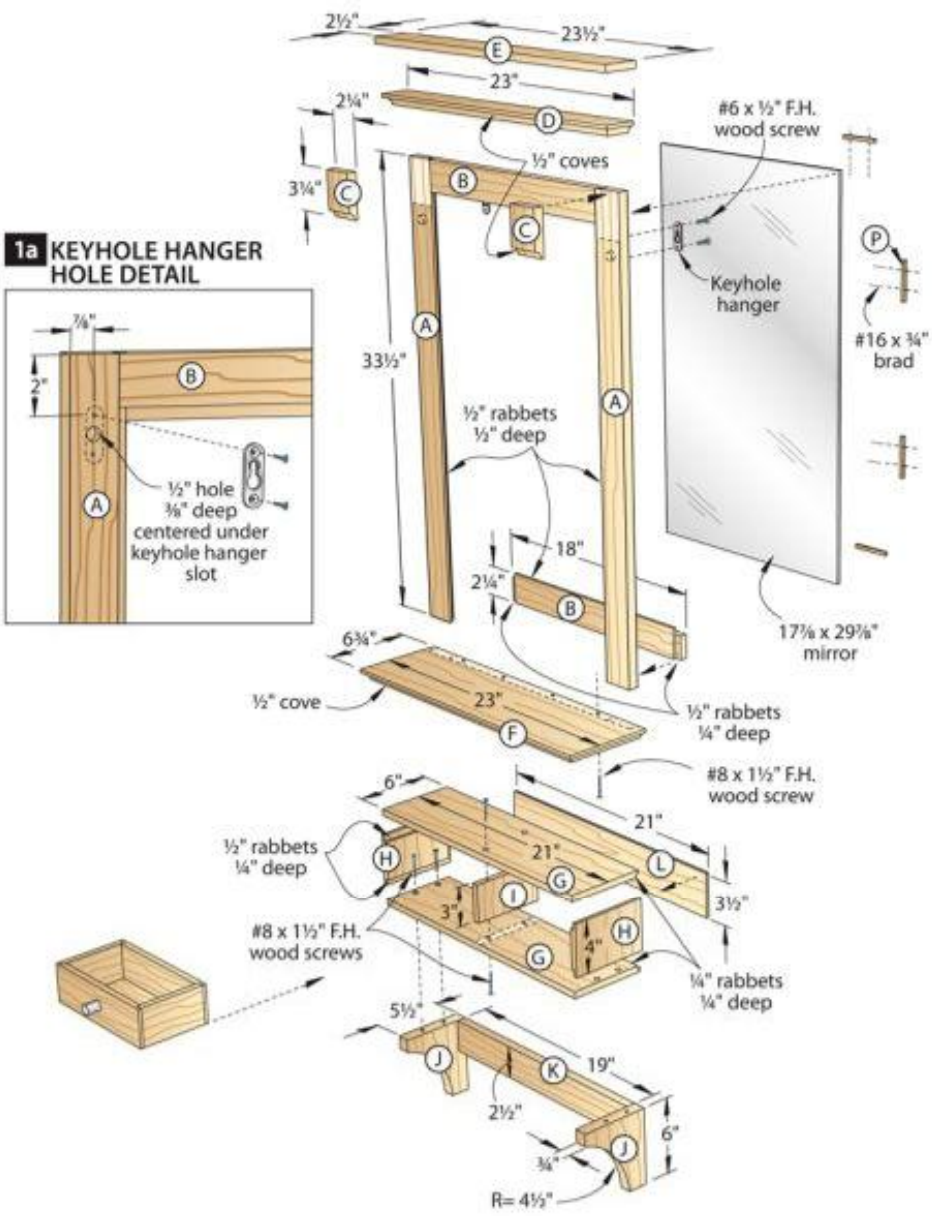
### The frame comes first

**1** Rip the stiles (A), rails (B), and a 10"-long blank to cut the two corner blocks (C) to width [**Materials List**, *page 35*]. Set the blank aside.

**2** Mount a ½" straight bit in your table-mounted router. [If you don't own a router table, see **More Resources**, *page 35* for free plans to make a simple MDF router table.] Raise the bit to ¼" and adjust the fence to cut a ½"-wide rabbet. Then rabbet one back edge of both stiles (A) and rails (B) [**Drawing 1**]. Raise the bit ⅛" and repeat until the rabbet reaches ½" deep [**Photo A**].

**3** Place a rail (B) facedown on the router table and set the bit height flush with the lip formed by the rabbet [**Photo B**]. Rout rabbets on both ends of the rails [**Photo C**].

**1 EXPLODED VIEW**



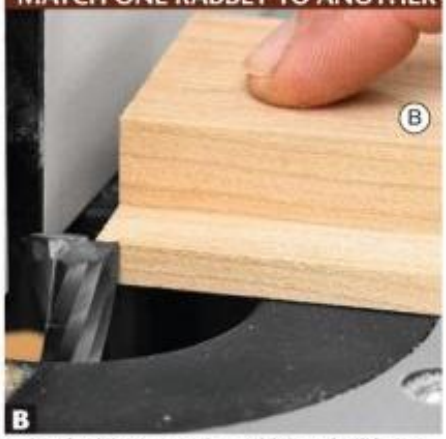

**1a KEYHOLE HANGER HOLE DETAIL**




**CUT RABBETS A HAIR AT A TIME**

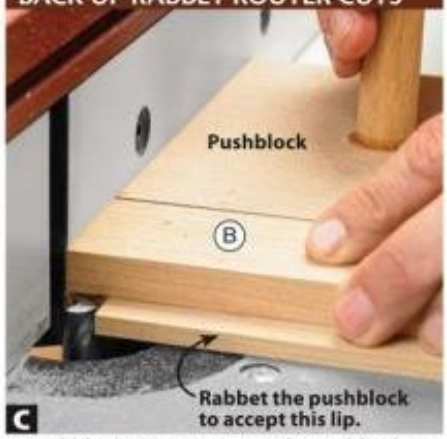
To avoid tear-out, raise your router bit no more than ⅛" at a time. Make the last pass your lightest to act as a cleanup cut.

**MATCH ONE RABBET TO ANOTHER**




Raise the bit to rout the rail (B) end rabbets flush with the edge rabbets and position the rail faces flush with those of the stiles (A).

**BACK UP RABBET ROUTER CUTS**




A pushblock stops tear-out when rabbeting rail (B) ends. Rabbet the pushblock bottom before routing the opposite rail end.

4 Glue and clamp the stiles (A) and rails (B) to form the frame [**Drawing 1**, **Photo D**].

5 Drill a ½" hole in the back face of each stile (A) to accommodate the keyhole hangers [**Drawing 1a**].

6 Cut the mirror top (D), cap (E), and shelf (F) to size. Then install a ½" cove bit in your router. In multiple ⅛"-deep passes, cut coves under the front edge and both ends of the mirror top and shelf [**Drawing 1**].

7 Retrieve the corner block (C) blank, and rout ½" coves on both ends. **Note:** *You can rout one long piece more easily and safely than two short parts.* Then cut both corner blocks to length. Finish-sand the frame (A/B), corner blocks, mirror top (D), and shelf (F) to 220 grit.

8 Glue and clamp the mirror cap (E) centered on the mirror top (D). After the glue dries, glue and clamp the mirror top and cap to the frame (A/B) and allow to dry.

9 Glue and clamp the corner blocks (C) to the stiles (A) with the block ends against the underside of the mirror top (D). Then glue, center, and clamp the shelf (F) to the bottom of the frame (A/B). Drill and drive four screws to reinforce the joint.

## Making a case for drawers

1 Cut the box top and bottom (G) and sides (H) to size. Install a ½" straight bit in your router table and set the fence to cut a ¼"-deep rabbet the thickness of the box top/bottom on the inside ends of the box sides.

2 Rout a ¼" rabbet along the back of the box top, bottom (G), and the sides (H). ***Quick Tip! Double-check plywood thicknesses.*** Not all ¼" birch plywood measures a true ¼" thick. Check the actual thickness before rabbeting the box top, bottom, and sides.

3 Cut a blank to width for the box divider (I). Place a box side (H) on the divider and mark the blank [**Photo E**], then cut the blank to length. Sand the box top and bottom (G), sides, and divider to 220 grit and set aside.

4 Cut blanks for the brackets (J) and cut the bracket rail (K) to size. Mark a 4½"-radius curve on both brackets, cut on the waste side of the arcs, and sand to the line [**Shop Tip**, *above*].

5 Glue and clamp the brackets (J) to the bracket rail (K). After the glue dries, glue and clamp the bracket assembly to the box bottom (G) with ½" insets on both sides. Drill ⅛" countersunk pilot holes and drive screws [**Photo F**] ⅜" from the ends [**Drawing 1**].

6 Glue and clamp together the box top (G), sides (H), and box-bottom assembly (G/J/K) [**Photo G**].

7 Cut two scrap spacers 10" long to center the box divider (I). With the box-divider edge flush with the front edges of the box top and bottom (G), clamp and screw the divider to the top and bottom [**Photo H**].

8 Measure between the rabbets along the box top/bottom (G) and between the sides (H) and cut the box back (L) to those dimensions. Glue and clamp the back in place.

9 Glue, center, and clamp the mirror frame (A–F) to the box (G–L) with the back edges flush.

## Make two clutter catchers

1 Cut the drawer fronts and backs (M) and sides (N) to size. ***Quick Tip! Measure twice, cut fronts.*** Double-check the drawer-opening width before cutting drawer fronts and backs to size. They should be 1/16" narrower and shorter than the opening.

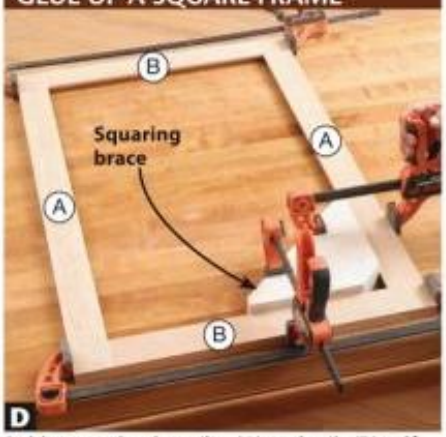
2 Using a ½" straight bit in your table-mounted router, rabbet the inside faces of the drawer fronts and backs (M)

## SHOP TIP

### Waste knot, want not

Instead of tossing pieces of wood with loose or ugly knots into the fireplace, work around these defects, as we did with the brackets (J). Position the workpiece to drop the knot into a waste area and cut it away. Not every knot belongs in the scrap bin, though. Small, tight knots away from joints add character to your project.

**GLUE UP A SQUARE FRAME**




Rabbets make the stiles (A) and rails (B) self-squaring, helped by a brace in one corner. [See **More Resources** for free brace plans.]

**CUT THE BOX DIVIDER TO FIT**

Use the face between the rabbets on the box sides (H) to define the box opening height and length of the divider (I).

**MOUNT BOX BRACKET ASSEMBLY**

A countersinking pilot bit (see **Sources**) drills a pilot hole and countersink to screw the bracket assembly (J/K) to the box bottom (G).

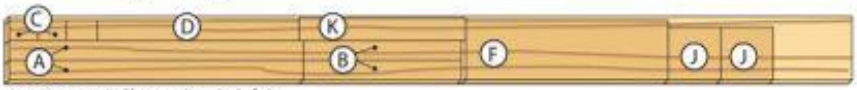
[**Drawing 2**]. Then rout the ¼" rabbets on the drawer fronts, backs, and sides (N).

**3** Cut the drawer bottoms (O) to fit between rabbets in the fronts/backs (M) and sides (N). Glue and clamp the sides to the fronts and backs; then add the drawer bottoms.

**4** Drill centered holes to suit your drawer pulls. Sand all parts to 220 grit and apply stain. (We used Varathane Traditional Cherry gel stain no. 445.) Then apply three coats of clear finish. (We used aerosol satin lacquer, sanding with 220 grit between coats.)

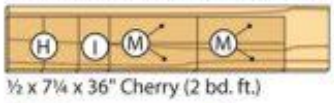
**5** Cut the mirror stops (P) to size. Then cut mirrored glass ⅛" shorter and narrower than the rabbeted openings. Place the mirror in the frame and nail the stops in place. Attach the drawer pulls and keyhole hangers. Now find a wall where you can display a project that reflects you and your craftsmanship.

## Cutting Diagram

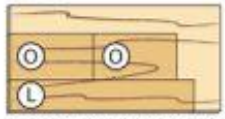



¾ x 7¼ x 96" Cherry (5.3 bd. ft.)

½ x 7¼ x 72" Cherry (4 bd. ft.) *Plane or resaw to the thickness listed in the Materials List.




½ x 7¼ x 36" Cherry (2 bd. ft.)




¼ x 12 x 24" Baltic birch plywood


Written by **Bob Wilson** with **Jeff Mertz**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine**; **Lorna Johnson**


## Materials List

| Part | | FINISHED SIZE T | W | L | Matl. | Qty. |
|---|---|---|---|---|---|---|
| **Mirror frame** | | | | | | |
| A | stiles | ¾" | 2¼" | 33½" | C | 2 |
| B | rails | ¾" | 2¼" | 18" | C | 2 |
| C* | corner blocks | ¾" | 2¼" | 3¼" | C | 2 |
| D | top | ¾" | 2¼" | 23" | C | 1 |
| E | cap | ½" | 2½" | 23½" | C | 1 |
| F | shelf | ¾" | 6¾" | 23" | C | 1 |
| **Box** | | | | | | |
| G | top/bottom | ½" | 6" | 21" | C | 2 |
| H | sides | ½" | 6" | 4" | C | 2 |
| I* | divider | ½" | 5¾" | 3" | C | 1 |
| J | brackets | ¾" | 5½" | 6" | C | 2 |
| K | bracket rail | ¾" | 2½" | 19" | C | 1 |
| L | back | ¼" | 3½" | 21" | BP | 1 |
| **Drawers and stops** | | | | | | |
| M | fronts/backs | ½" | 2 15/16" | 9 15/16" | C | 4 |
| N | sides | ½" | 2 15/16" | 5¼" | C | 4 |
| O | bottoms | ¼" | 5¼" | 9⅞" | BP | 2 |
| P | mirror stops | ⅜" | ⅜" | 5" | C | 6 |

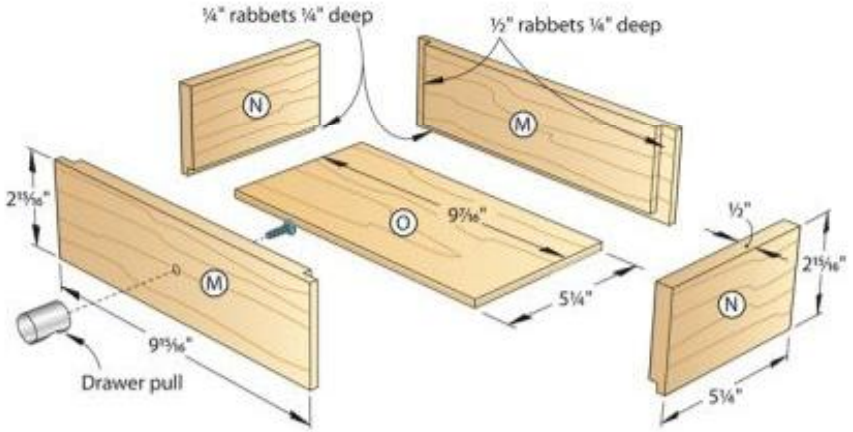
*Parts initially cut oversize. See the instructions.

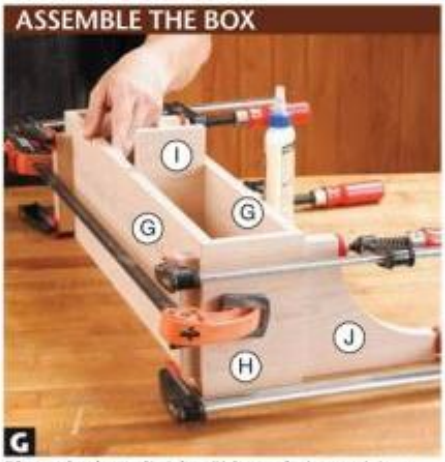
**Materials key:** C–cherry; BP–Baltic birch plywood.
**Supplies:** #6x½" flathead wood screws (4), #8x1½" flathead wood screws (12), #16x¾" brads, keyhole hangers (2), drawer pulls (2), 17⅞x29⅞" mirror.
**Bits:** ½" straight and ½" cove router bits; ½" drill bit. Optional: ⅛" pilot hole countersinking drill bit.

## Source

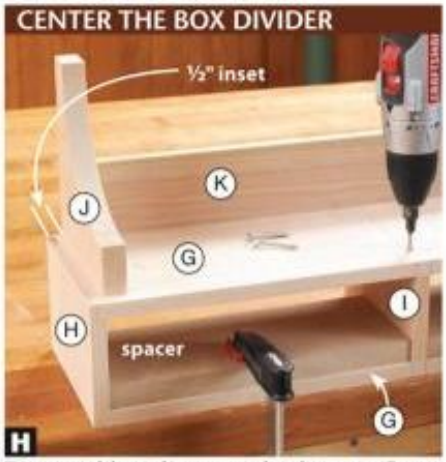
**Countersinking pilot bit:** Snappy 5-piece countersinking drill set no. 830846, $28, Woodcraft, 800-225-1153 or woodcraft.com.

## 2 DRAWER




Place the box divider (I) loosely in position to prevent the box (G/H) from bowing under clamping pressure.



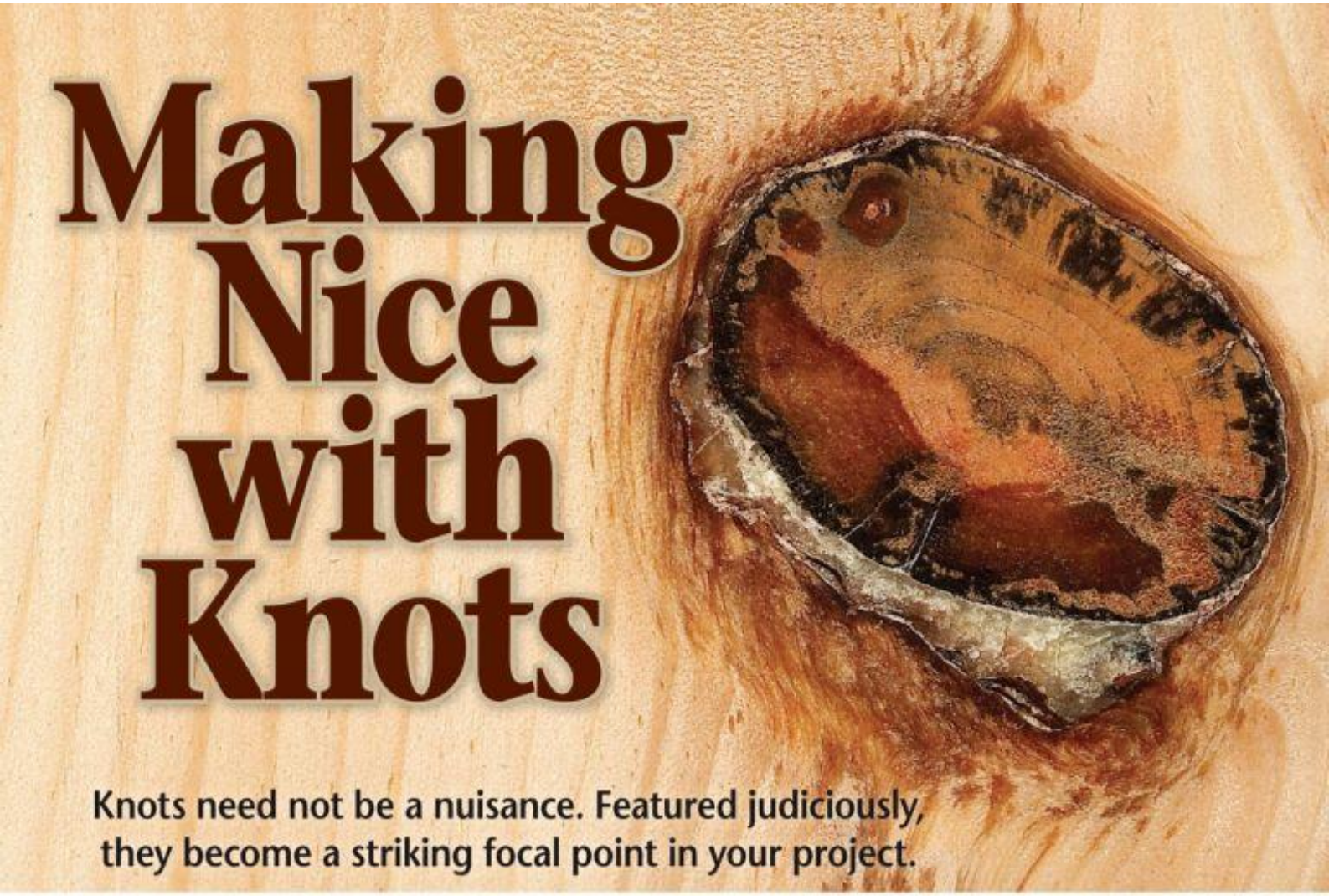

Two equal-length spacers that leave a ½" gap help center and square the box divider (I) while you screw it in position.

## MORE RESOURCES

**FREE DOWNLOADS**
- Learn more about Basic-Built projects and skills
  woodmagazine.com/basicbuilt

**FREE PLANS**
- "Right Angle Clamping Jig"
  woodmagazine.com/anglejig
- "Portable Router Table"
  woodmagazine.com/bbrt

# Making Nice with Knots



**Knots need not be a nuisance. Featured judiciously, they become a striking focal point in your project.**

## Know your knot anatomy

A knot is nothing more than the base of a tree branch where it intersected the tree trunk, interrupting the otherwise straight grain pattern, causing it to flow around it. Knots can be grouped into two basic categories, but you'll see them in all stages between the two.

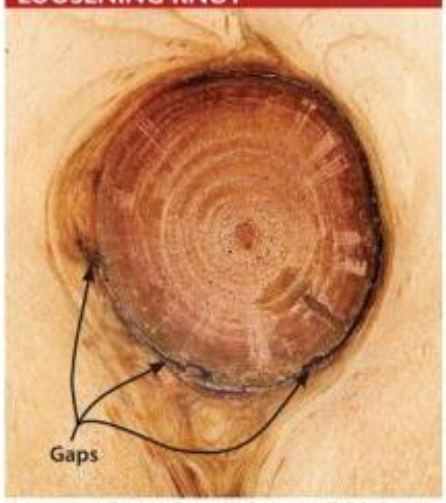
***Tight knots*** appear as dark, dense circular or oval spots with irregular grain. The wood remains unbroken between the tree trunk and the embedded branch. They represent a relatively weaker spot in the wood, and, over time, could split as the knot moves at a different rate than the surrounding wood.

***Loose knots*** are generally darker and have shrunk away and detached from the surrounding wood during the growing process. They contain visible cracks or gaps and are often surrounded by a thin layer of scar tissue called *callus*. Some are loose enough to be removed by hand and require extra precautions when cutting.

**TIGHT KNOT**

This tight knot is integrated into the wood and will not affect the way you saw, joint, or plane the board.

**LOOSENING KNOT**




Gaps have formed around some of this knot indicating signs of loosening. It could chip out when jointed or planed.

**LOOSE KNOT**

These loose knots show noticeable movement when touched. Machining this board risks turning the knots into projectiles.

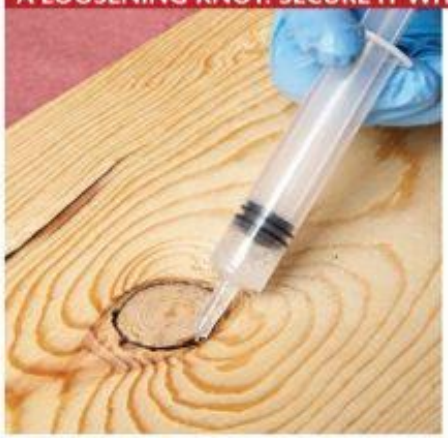
## Keep your knots where they belong

Before you can machine them, use 5-minute epoxy to lock loose and loosening knots into place and fill any gaps and voids. When the epoxy cures, you can saw, joint, or plane the wood without fear of knocking the knot out, or worse, sending it flying across the shop or damaging your machinery.

Be sure to choose clear-drying epoxy so the knot retains its natural look. (The epoxy will appear transparent in its applicator.) White-drying, opaque, or colored epoxy often highlights the knot, emphasizing it with an unnatural ring.

Here are two approaches for locking in loosening and loose knots.

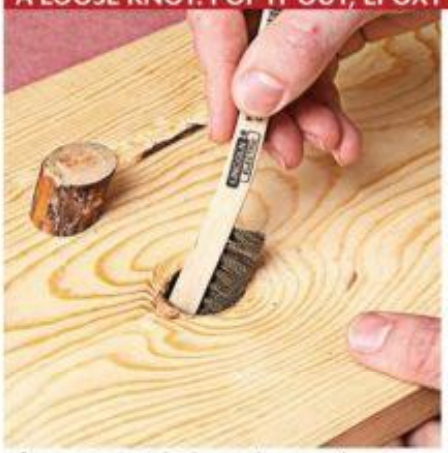
### A LOOSENING KNOT: SECURE IT WITH SUCTION



Small gaps in loosening knots may require injecting epoxy with a glue syringe in order to lock in knots.

To draw the epoxy into the gaps, use a shop vacuum. Protect the hose by rubber-banding a paper towel over the end.

### A LOOSE KNOT: POP IT OUT, EPOXY IT, POP IT BACK IN



After removing the knot, clean any loose bark and debris from the knothole and the knot using a brass wire brush.

Mix up a small amount of epoxy and spread it liberally on the outside of the knot and reposition it in the board.

Spread additional epoxy to fill any remaining voids. After the epoxy cures fully, machine as you would any other board.

## Show off your knots

Knots make an acceptable feature in many projects, especially those made of pine and cedar. In fact country-style or rustic furniture almost requires them. Rather than letting knots dot the project will-nilly, be deliberate about their placement as you would any other wood figure. Take a look at some of our favorite examples:

We found two knotty pine boards sequentially cut, and used the opportunity to arrange them into mirrored door panels.

This tight cluster of knots on the top rail of a pine bookcase receives a front-and-center treatment. We used a paper cutout of the part overlaid on the uncut board to easily visualize the knots' location in the final part.

## PROJECT HIGHLIGHTS

- Biscuit joinery simplifies assembly.
- Spray-on shellac provides an instant aged patina.
- Find low-cost pine at home centers.

# Country Pine Cabinet

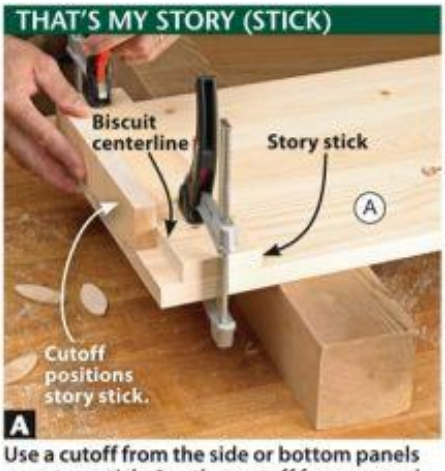
**Build only the lower half for an attractive and compact storage cabinet suitable for any room in the house.**

Just right: That describes the size of this project. Not so big that it dominates a kitchen or dining room, but big enough to offer ample storage and display space. The lower cabinet alone makes an attractive sideboard, *above*. Simple joinery includes rabbet joints for the drawers, and stub tenons and grooves for the doors. Once the doors are built, hinges with screw slots make it easy to position the doors up and down and side-to-side for a perfect fit.

## Start on the lower cabinet

1 Edge-glue stock for the sides (A) and bottom (B) [**Materials List**, *page 44;* **Drawing 1**]. While the panels dry, cut the top cleats (C) to size and drill 3/16" slots in one of them for the screws that secure the top (O) [**Drawing 1**].

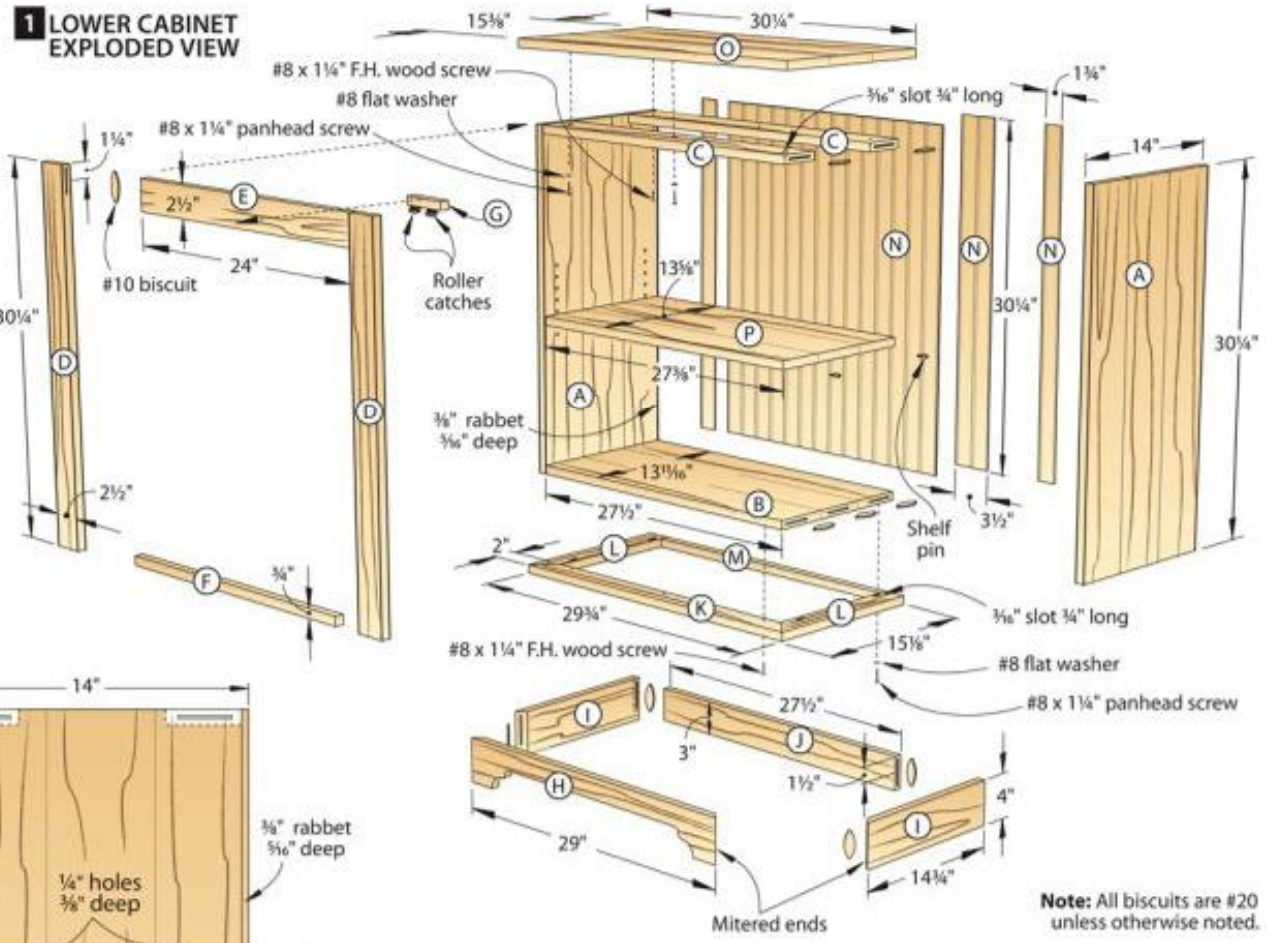
Overall dimensions:
30¼" wide × 15⅜" deep × 76¼" high.



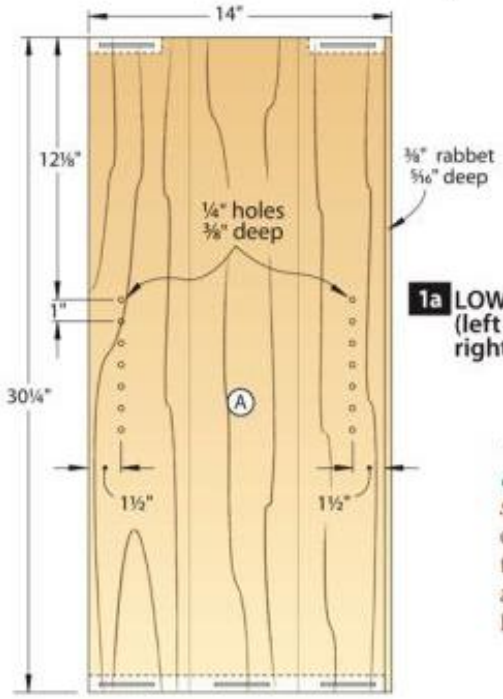

Use a cutoff from the side or bottom panels as a story stick. Another cutoff from a panel positions the story stick.

Align the mark on the base of the biscuit joiner with the marks on the story stick and cut the biscuit slots.

The bottom (B) is narrower than the sides (A) so align the story stick flush with the front edge, then mark the biscuit-slot locations.



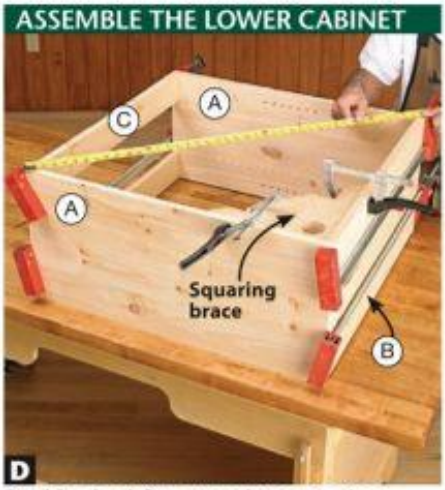

**Note:** All biscuits are #20 unless otherwise noted.




**1a** LOWER CABINET SIDE (left inside face shown, right is a mirror image)

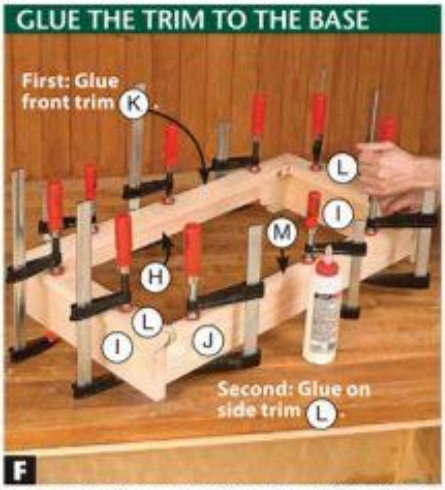
**2** Trim the sides (A) and bottom (B) to size. ***Quick Tip! Make a story stick.*** Save a cutoff from the end of one of the panels. Lay out the locations of the biscuit slots on the cutoff and use this story stick to lay out biscuit locations quickly. Set up a dado blade in your tablesaw and cut a ⅜" rabbet along the back edges of the sides **[Drawing 1a]**.

**3** Position the story stick **[Photo A]** and cut the biscuit slots in the sides (A) **[Photo B]**—two slots at the top and three at the bottom **[Drawing 1a]**. Now align the end of the story stick with the front




Double-check for square by comparing diagonal measurements. A squaring brace holds the case square during assembly.

Use the bottom rail (F) as a spacer when gluing the stiles (D) and upper rail (E) to the case. Then glue the bottom rail in place.




Center the front trim (K) on the width of the base (H/I/J), with a ⅜" overhang. Then glue the remaining trim pieces in place.

edge of the bottom (B), transfer the marks to the panel [**Photo C**], then cut these slots. Cut biscuit slots in the ends of the top cleats (C) also [**Drawing 1**].

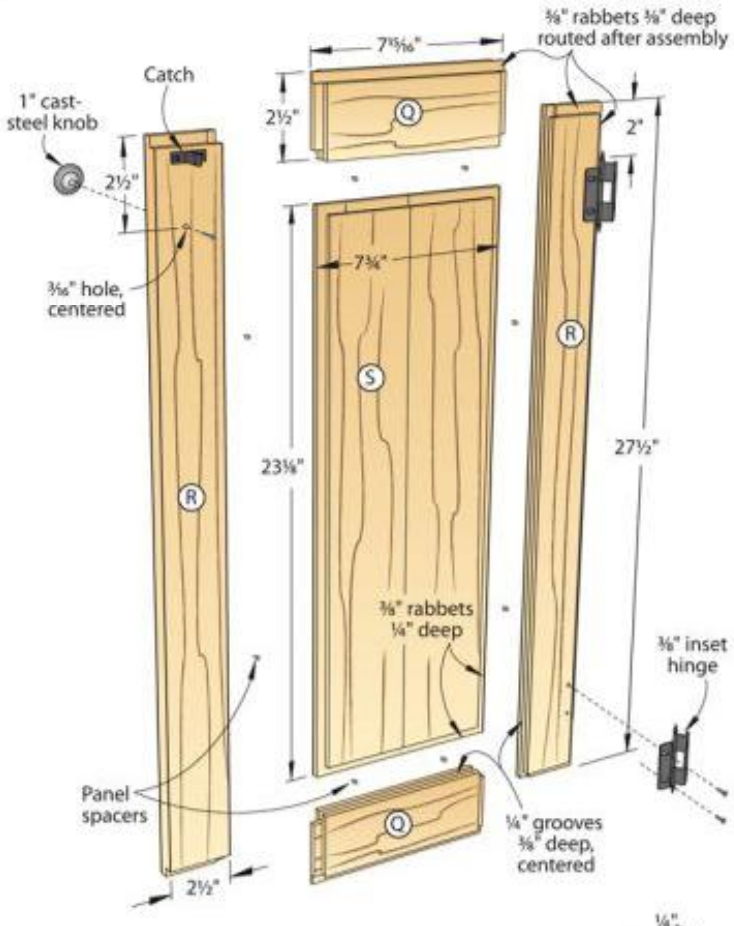
**4** Lay out and drill the shelf-pin holes in the sides (A) [**Drawing 1a; More Resources,** *page 43*]. Apply glue to the biscuit slots in a side, one end of the bottom (B), and the top cleats (C). Insert biscuits, and assemble these pieces [**Drawing 1**]. Glue the remaining side to this assembly [**Photo D**].

**5** Cut the face-frame stiles (D) and rails (E, F) to size. ***Quick Tip! Shave later.*** Cut the stiles to width so that they overhang the sides by about 1/32". This allows you to plane or sand them perfectly flush with the sides after assembly. Cut slots for #10 biscuits in the top edge of the stiles and the ends of the top rail (E). Glue the top rail and stiles to the case, with the bottom rail (F) in place as a spacer [**Photo E**]. After clamping, glue the bottom rail to the case. Cut the catch block (G) to size and glue it to the back of the top rail, centered, with their bottom edges flush. Sand the lower cabinet to 220 grit.

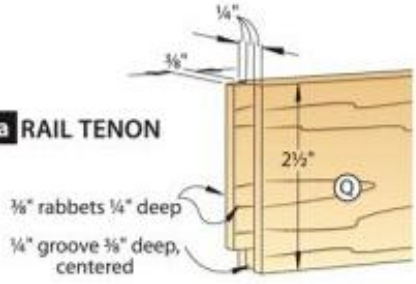
**6** Rip the base front (H), sides (I), and back (J) to width and 1" longer than listed. Bevel-cut both ends of the base front to bring it to finished length, then bevel-cut one end of each base side to finished length. Dry-fit the base front and sides, then crosscut the base back to fit between the sides. Cut slots for #20 biscuits in each piece [**Drawing 1**]. Make a copy of the **Base Front Pattern** from the *WOOD Patterns®* insert and spray-adhere it to a piece of ¼" hardboard or plywood. Cut and sand the edges smooth. Trace this template onto both ends of the base front, bandsaw the front to shape, then glue and clamp the base together. Save the template to use again later.

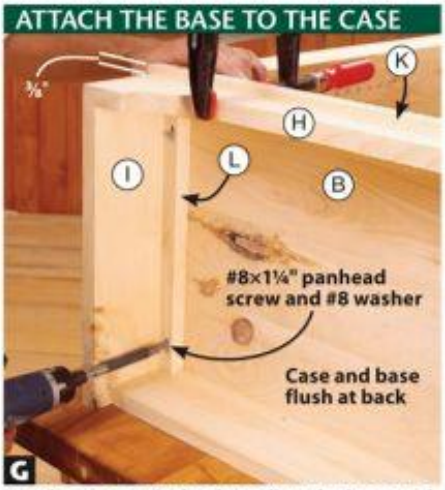
**7** Rip the front base trim (K), side base trim (L), and back base trim (M) to width and 1" longer than listed. Miter-cut the front trim ¾" longer than the lower-cabinet width. Miter-cut the side trim ⅜" longer than the case depth, then

**2 DOOR (left door, inside face shown)**

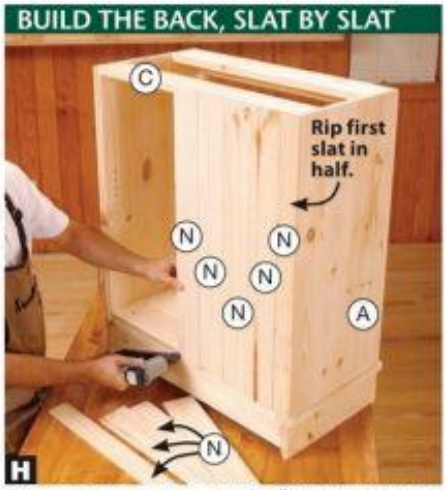



**2a RAIL TENON**

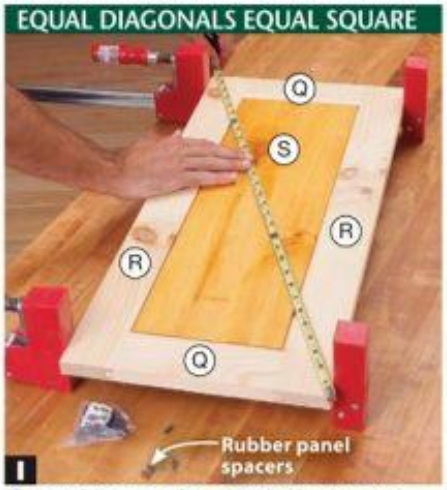





Lay the case on its back to align the base and case. Drive panhead screws with washers through the slots in the side trim (L).




Start with a slat ripped in half, then work your way across the carcase. Angle the staple gun to reduce the chances of splitting the slats.




Place rubber panel spacers in the grooves before inserting the panel and gluing up the frame. Check the door for square.

drill 3⁄16"-wide slots in the side trim [**Drawing 1**]. Dry-fit the front and side trim to the base (H/I/J) and cut the back trim to fit between the sides. Then glue the trim pieces to the base [**Photo F**]. After the assembly dries, sand it to 220 grit, then center the base on the case width and screw it in place [**Photo G**].

**8** ***Note:*** *You can cut a single panel from beadboard plywood instead of using individual beadboard slats.* Cut the beadboard slats (N) to length [**Drawing 1**]. Rip one slat in half, place the ripped edge in the rabbet in a side (A), and staple or nail it in place. Then staple full-width slats across the back [**Photo H**], ripping the final slat to fit.

**9** Glue up panels for the top (O) and shelf (P) [**Drawing 1**]. Cut them to size. Attach the top with panhead screws and washers at the front and wood screws at the rear.

## Take a swing at the doors

**1** Cut the door rails (Q) and stiles (R) to size and glue up stock for the door panels (S) [**Drawing 2**]. After the glue dries, cut the panels to size and rabbet the edges and ends. Using a dado blade in the tablesaw, cut a ¼" groove centered on the inside edge of each rail and stile, and form stub tenons on the rails to fit the grooves [**Drawing 2a**].

**2** Sand the door panels (S) and apply a finish to them before assembling the door. (We sprayed on a coat of amber shellac.) After the finish dries, glue up the door [**Photo I**].

**3** After the glue dries, cut 3⁄8" rabbets on the ends and outside edge of each door [**Drawing 2**]. Drill a hole for the knob, attach the hinges, then mount the doors to the cabinet [**Shop Tip,** *right*]. Install the catches on the doors and the roller catches to the catch block (G).

## Build the upper cabinet

**1** Edge-glue stock for the sides (T), fixed shelves (U), and a 13"-long panel for the dividers (V) [**Drawing 3**]. Cut these panels to size after the glue dries. Save a cutoff to make a story stick as before.

**2** Rout a 3⁄8" stopped rabbet on the back inside edge of each side (T) [**Drawing 3a**]. Drill the shelf-pin holes, then lay out and cut the biscuit slots on the inside face and ends of each side (T) [**Drawing 3a; Photos J, K**].

Lay out biscuit-slot locations on a story stick made from a cutoff from the panels. Then use the story stick to position the biscuit joiner.

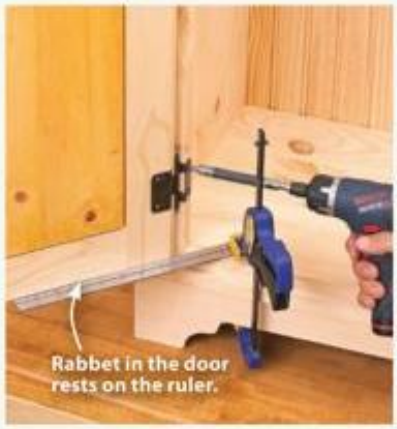
Using the measurements in Drawing 3a, align a scrapwood fence to cut biscuit slots parallel to the front edge and the rabbet.

### SHOP TIP

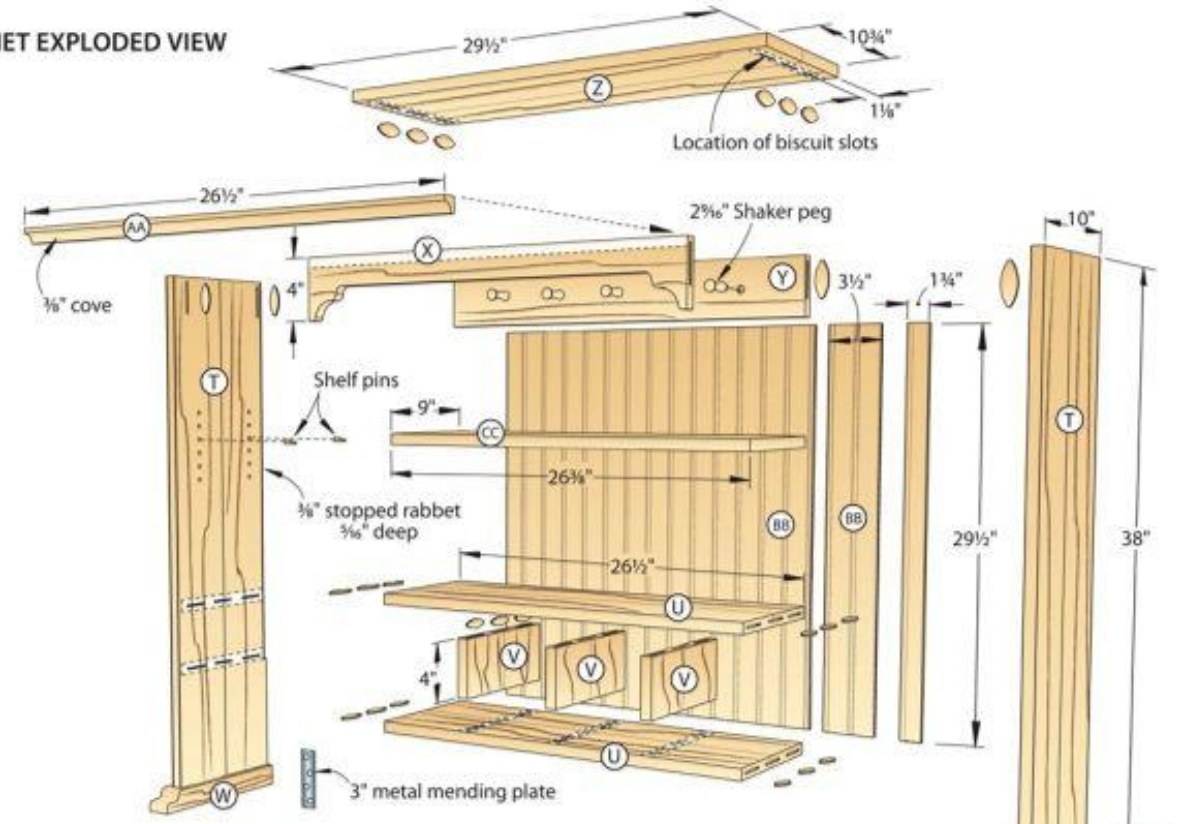
#### A rule for hanging doors

Use the ruler from a combination square to help position the doors. The ruler's thickness makes it stiff enough to support the door, and it provides the perfect amount of clearance between the rabbet in the door and the cabinet.

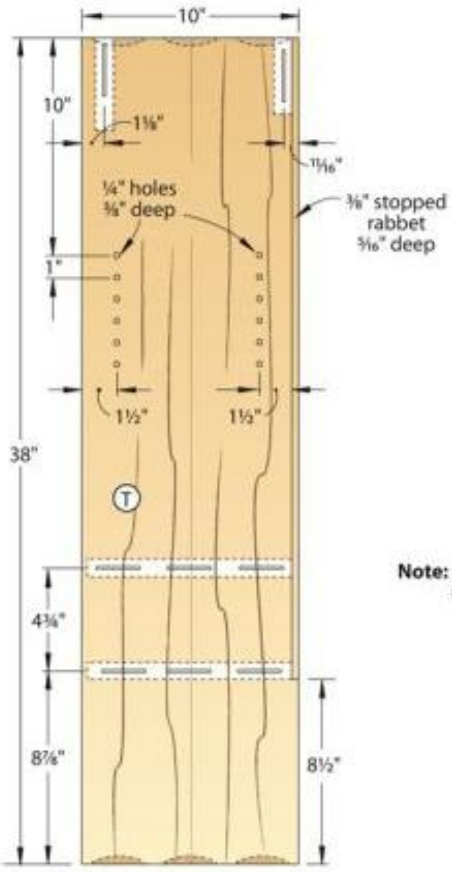
Clamp the ruler to the bottom of the cabinet, then rest the door rabbet on the ruler. Slots in each leaf of the hinges allow for fine-tuning the door's position.



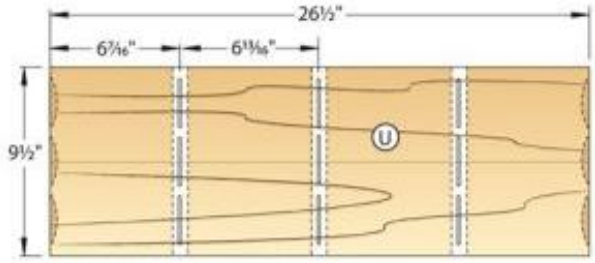
## 3 UPPER CABINET EXPLODED VIEW



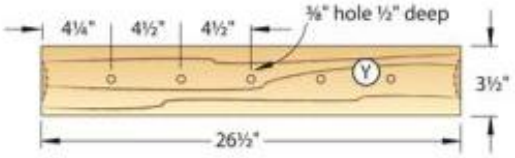

## 3a UPPER CABINET SIDE (left inside face shown, right is a mirror image)




## 3b FIXED SHELF



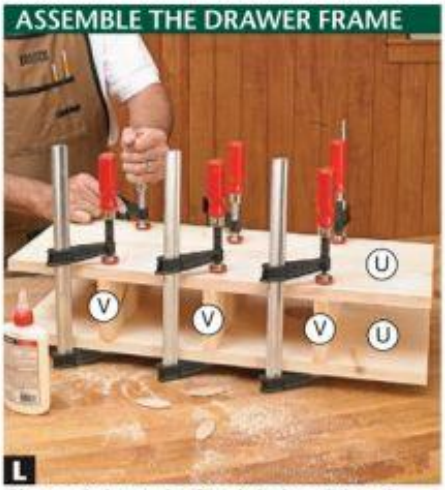

## 3c BACK UPPER RAIL



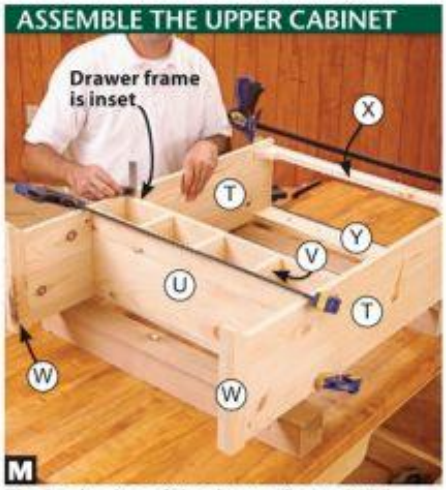

**Note:** All slots are for #20 biscuits.

**3** Retrieve the fixed shelves (U) and dividers (V). Use your story stick to lay out the biscuit slots [**Drawing 3b**]. Then cut the slots, and glue up these pieces [**Photo L**].

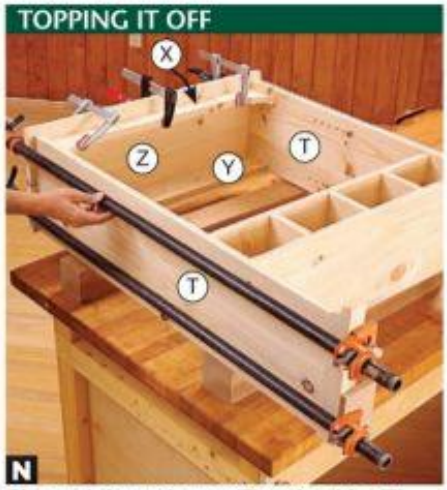
**4** From 1½"-thick stock (or laminated ¾" stock), cut the feet (W) to size. Make two copies of the **Upper Cabinet Foot Pattern**, adhere one to each foot, and bandsaw and sand the feet to shape.




Glue and clamp the fixed shelves (U) and dividers (V). The edges of the shelves and dividers should be flush.




The back edge of the drawer frame (U/V) should align with the edge of the rabbet along the back of the sides (T).




Glue and clamp the top (Z) to the sides (T) and front rail (X). Do not glue the top to the back rail (Y) to allow for wood movement.

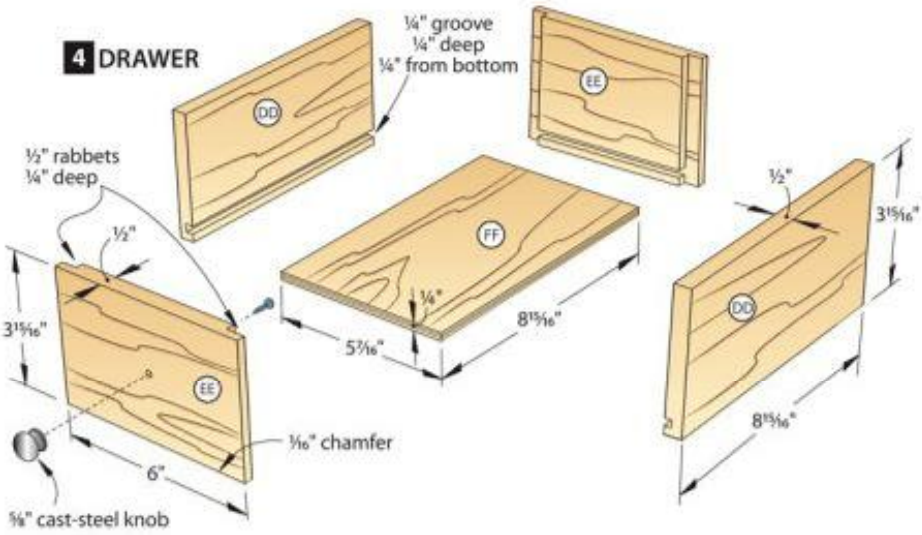
Use the story stick to lay out biscuit slots in each foot. Cut the slots, then glue the feet in place [**Drawing 3**].

**5** Cut the front upper rail (X) and back upper rail (Y) to size. Lay out and drill holes for the Shaker pegs in the back rail [**Drawing 3c**], then cut biscuit slots in the ends of the rails. Retrieve the base front template, trim it along the shaded portion of the pattern, then lay out the cutout on the front rail. Cut and sand the front rail to shape. Then glue up the sides (T/W), drawer frame (U/V), and upper rails (X, Y) [**Photo M**].

**6** While the glue dries, glue up a panel for the top (Z). After cutting it to size, cut biscuit slots toward each end and glue the top in place [**Photo N**], but do not glue it to the back upper rail (Y). Glue the Shaker pegs into the holes in the back rail.

**7** In a ½×2×27" blank, rout a ⅜" cove. Rip the cove (AA) from this blank, crosscut it to fit between the sides (T) [**Drawing 3**], and glue and clamp it in place. Cut beadboard (BB) to length to fit between the top (Z) and the lower edge of the drawer frame (U/V) and install it in the same fashion as on the lower cabinet.

**8** Glue up a panel for the shelf (CC). After the glue dries, cut it to size to fit between the sides (T) with ⅛" clearance.




## Make the drawers and finish it up

**1** From ½" stock, cut the drawer sides (DD) and fronts/backs (EE) to size. Cut or rout the rabbets on the fronts and backs to accept the sides [**Drawing 4**]. Then cut or rout a groove in each drawer piece to accept the bottom (FF). Cut the bottoms to size, then dry-fit the drawers to check their fit into the drawer frame (U/V). Glue up the drawers, gluing the bottoms into the grooves.

**2** Rout or plane a 1⁄16" chamfer along the front bottom edge of each drawer front (EE) to create an even gap at the top and bottom. Drill a hole centered on each drawer front for the knob.

**3** Remove the hardware from the cabinet, remove the tops (O, Z), and apply a finish. (We used amber shellac to seal the pine and create a warm tone, then topped it with two coats of a water-based satin-finish polyurethane.) After the finish dries, reinstall the hardware and tops and move the upper and lower cabinets to their new home. Place the upper cabinet on the lower one and screw a mending plate between the sides (A, T) to secure the two assemblies [**Drawing 3**].

Written by **Craig Ruegsegger** with **Kevin Boyle**
Project design: **Jeff Mertz**
Illustrations: **Roxanne LeMoine**; **Lorna Johnson**

*continued on page 44*

## MORE RESOURCES

### FREE PLAN

- Squaring braces at woodmagazine.com/brace

### FREE VIDEO

- "Drilling Shelf Support Holes" at woodmagazine.com/shelfholes

### RELATED ARTICLES

- "How to Get Started in Biscuit Joinery" issue 128 (November 2000) $
- "Avoiding Biscuit Joiner Blunders" issue 193 (October 2009)

($=Download this article from woodmagazine.com/plans for a small fee. Type "biscuit" in the Search box.

## Cutting Diagram

¾ x 5½ x 96" Pine (4 bd. ft.) (2 needed)

¾ x 5½ x 96" Pine (4 bd. ft.) *Plane or resaw to the thickness listed in the Materials List.

¾ x 5½ x 96" Pine (4 bd. ft.)

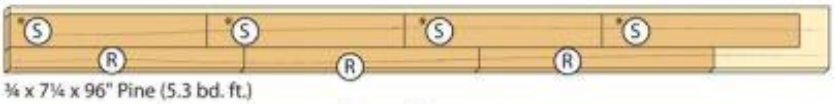
¾ x 7¼ x 96" Pine (5.3 bd. ft.)

5/16 x 3½ x 96" Beadboard (3 needed)

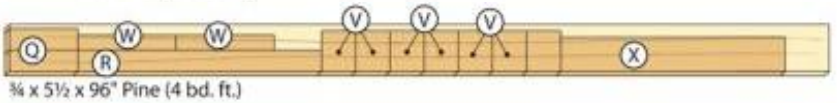
5/16 x 3½ x 96" Beadboard (3 needed)

¾ x 5½ x 96" Pine (4 bd. ft.)

¾ x 5½ x 96" Pine (4 bd. ft.)



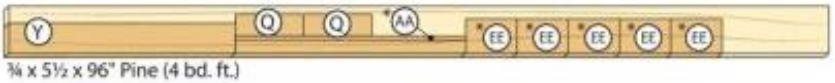
¾ x 7¼ x 96" Pine (5.3 bd. ft.)



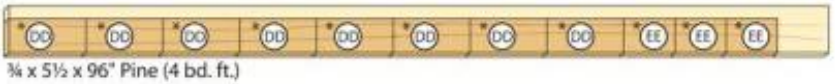
¾ x 5½ x 96" Pine (4 bd. ft.)

¾ x 5½ x 96" Pine (4 bd. ft.) (2 needed)

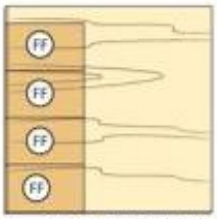
¾ x 5½ x 96" Pine (4 bd. ft.) (2 needed)



¾ x 5½ x 96" Pine (4 bd. ft.)



¾ x 5½ x 96" Pine (4 bd. ft.)



¼ x 24 x 24" Baltic birch plywood

Find more furniture plans at
woodmagazine.com/furniture

## Materials List

| Part | | FINISHED SIZE T | W | L | Matl. | Qty. |
|---|---|---|---|---|---|---|
| **Lower cabinet and base** | | | | | | |
| A | sides | ¾" | 14" | 30¼" | EP | 2 |
| B | bottom | ¾" | 13 11/16" | 27½" | EP | 1 |
| C | top cleats | ¾" | 3½" | 27½" | P | 2 |
| D | face-frame stiles | ¾" | 2½" | 30¼" | P | 2 |
| E | face-frame top rail | ¾" | 2½" | 24" | P | 1 |
| F | face-frame bottom rail | ¾" | ¾" | 24" | P | 1 |
| G | catch block | ¾" | ¾" | 4" | P | 1 |
| H* | base front | ¾" | 4" | 29" | P | 1 |
| I* | base sides | ¾" | 4" | 14¾" | P | 2 |
| J* | base back | ¾" | 3" | 27½" | P | 1 |
| K* | front base trim | ¾" | 2" | 29¾" | P | 1 |
| L* | side base trim | ¾" | 2" | 15⅛" | P | 2 |
| M* | back base trim | ¾" | ¾" | 25¾" | P | 1 |
| N | beadboard slats | 5/16" | 3½" | 30¼" | BB | 9 |
| O | top | ¾" | 15⅜" | 30¼" | EP | 1 |
| P | shelf | ¾" | 13⅜" | 27⅜" | EP | 1 |
| **Doors** | | | | | | |
| Q | rails | ¾" | 2½" | 7 5/16" | P | 4 |
| R | stiles | ¾" | 2½" | 27½" | P | 4 |
| S | panels | ½" | 7¾" | 23⅛" | EP | 2 |
| **Upper cabinet** | | | | | | |
| T | sides | ¾" | 10" | 38" | EP | 2 |
| U | fixed shelves | ¾" | 9½" | 26½" | EP | 2 |
| V* | dividers | ¾" | 9½" | 4" | EP | 3 |
| W | feet | 1½" | 1¾" | 11½" | P | 2 |
| X | front upper rail | ¾" | 4" | 26½" | P | 1 |
| Y | back upper rail | ¾" | 3½" | 26½" | P | 1 |
| Z | top | ¾" | 10¾" | 29½" | EP | 1 |
| AA* | cove | ½" | ½" | 26½" | P | 1 |
| BB | beadboard slats | 5/16" | 3½" | 29½" | BB | 9 |
| CC | shelf | ¾" | 9" | 26⅛" | EP | 1 |
| **Drawers** | | | | | | |
| DD | sides | ½" | 3 5/16" | 8 5/16" | P | 8 |
| EE | fronts/backs | ½" | 3 1/16" | 6" | P | 8 |
| FF | bottoms | ¼" | 5 7/16" | 8 5/16" | BP | 4 |

*Parts initially cut oversize. See the instructions.

**Materials key:** EP–edge-glued pine, P–pine, BB–beadboard, BP–birch plywood.
**Supplies:** Spray adhesive, #8 × 1¼" flathead wood screws (6), #8 × 1¼" panhead screws (7), #8 flat washers (7), #10 biscuits (2), #20 biscuits (62), ⅜ × 3" mending plates (2).
**Blade and bit:** Dado blade, ⅜" cove router bit.

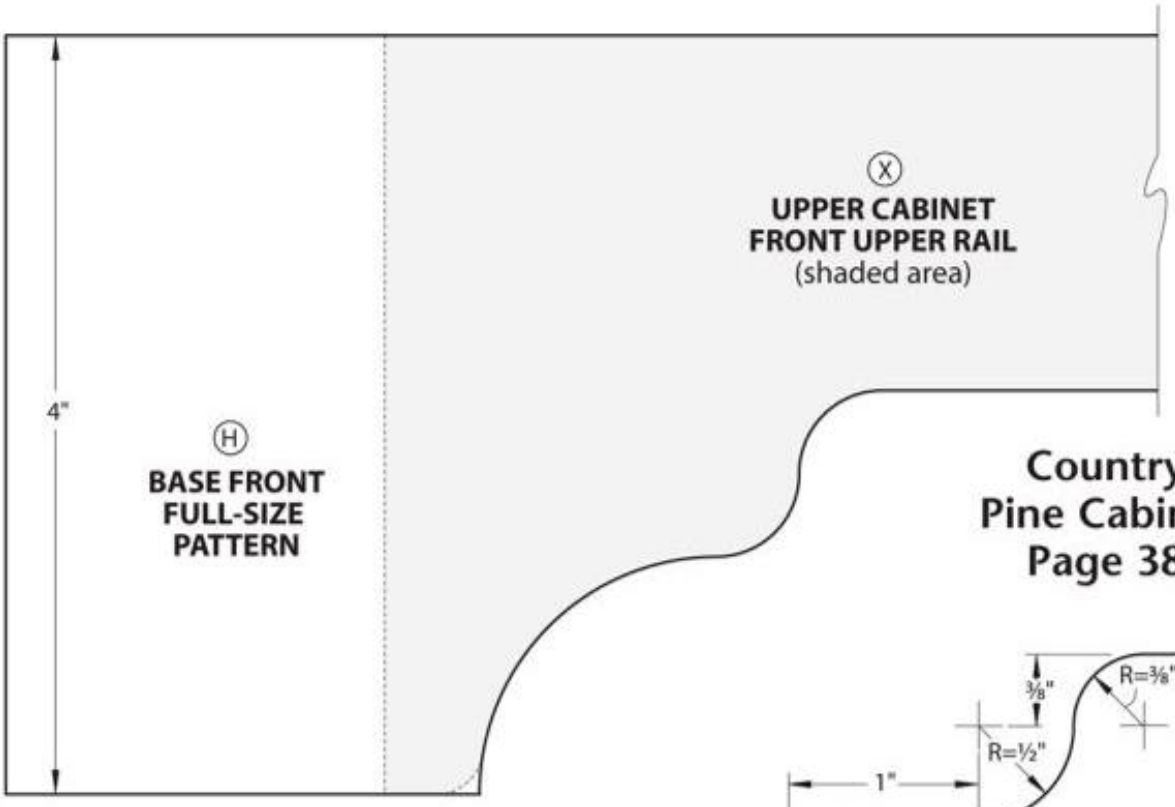
## Source

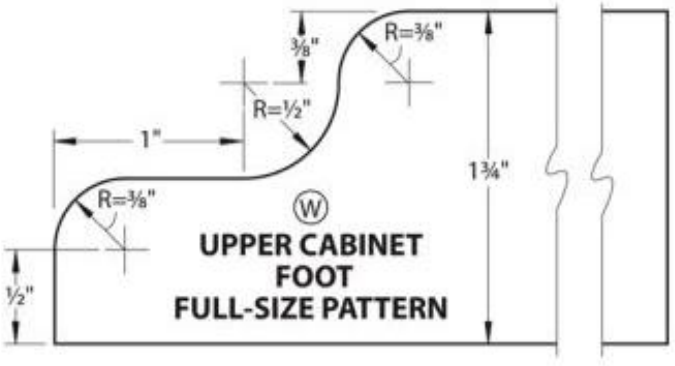
**Hardware:** ⅜" inset wrought-iron hinges (4) no. 00H32.50, $5.40 [pair]; 2 9/16" Shaker pegs (5) no. 41K25.08 $0.28; shelf pins (8) no 63Z06.04, $7.50 [pack of 20]; roller catches (2) no. 00W11.02, $1.10; rubber panel spacers (16) no. 00S08.14, $4.60 [pack of 100]; 1 × 1" cast-steel knobs (2) no. 01W96.03, $3.10; ⅛ × ⅜" cast-steel knobs (4) no. 01W96.01, $2.30, Lee Valley, 800-871-8158, leevalley.com.

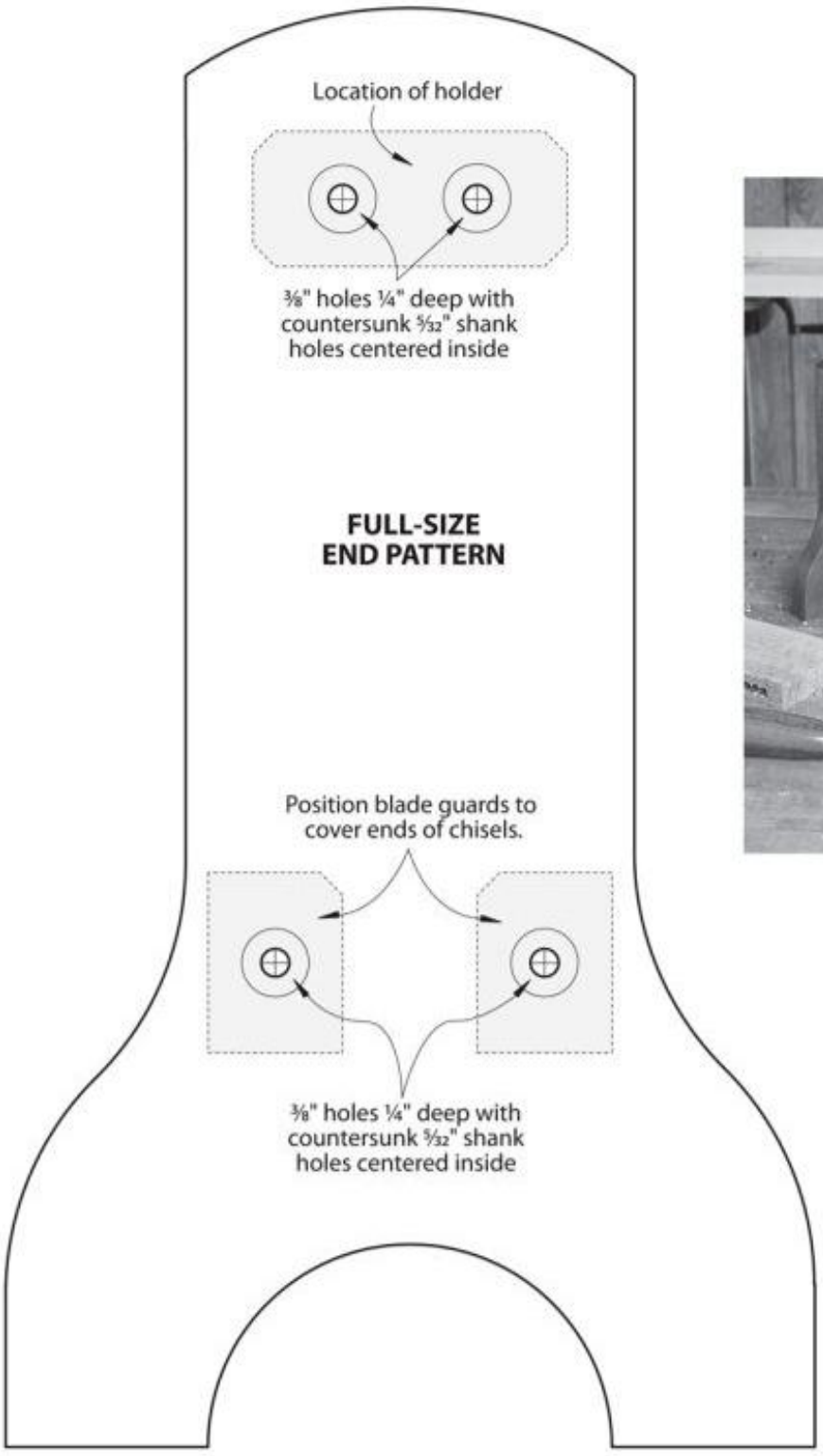
Better Homes and Gardens®
# WOOD® PATTERNS®
*March 2010* *Issue 196*

Dear Reader: As a service to you, we've included full-size patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Materials List and the drawings accompanying the project you're building.

© Copyright Meredith Corporation, 2010. All rights reserved. Printed in the U.S.A. Meredith Corp., the publisher of WOOD Patterns®, allows the purchaser of this pattern insert to photocopy these patterns solely for personal use. Any other reproduction of these patterns is strictly prohibited.



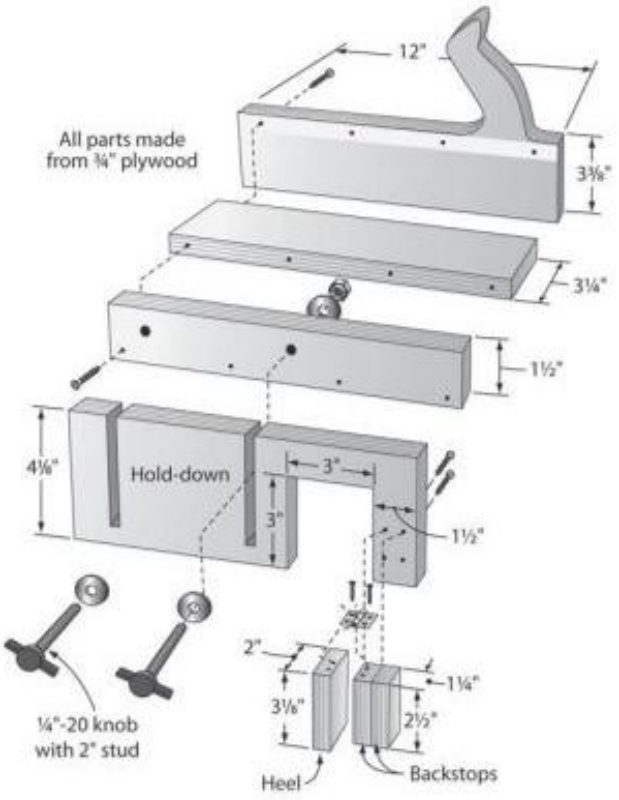




Location of holder
⅜" holes ¼" deep with countersunk 5/32" shank holes centered inside
FULL-SIZE END PATTERN
Position blade guards to cover ends of chisels.
⅜" holes ¼" deep with countersunk 5/32" shank holes centered inside

## Chisel Rack
## Page 18

## At-the-ready Pushblock
## Page 8

**FULL-SIZE HANDLE PATTERN**



"Daddy, the toilet won't stop running!"
"Can I move my bedroom into the basement?"
"Uh-oh! Dad's gonna freak when he sees that hole in the wall..."
"Honey, what do you think about mauve in the dining room and hunter green in the kitchen?"
"How am I ever gonna get all this done?!?"

# Let us help with your homework

## How to save your weekend...

Don't pay someone else to tackle that home-improvement project. Do it yourself and save! These downloadable videos show you step-by-step how to complete any home how-to project. From plumbing to painting. From kitchens to baths. From floor to ceiling. Indoors and out.

**Download. Learn. Do.**

Home How-To
VIDEO CENTER

Every home-improvement project starts at **www.homehowtovideo.com**

# We have the hardware and supplies you need!

## Functional Hardware

Knobs & Pulls

Drawer Slides

Hinges

## Abrasives & Adhesives

Sheet Stock

Discs

Wood Glue

## Tools

Bits & Blades

Clamps

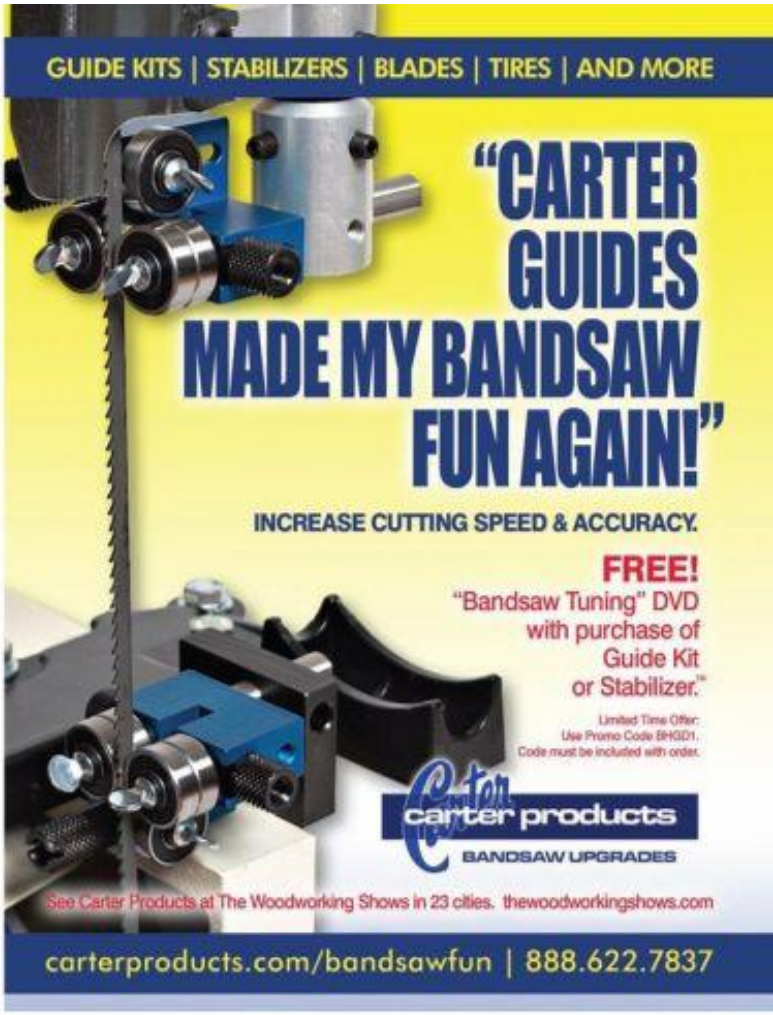
Request a FREE catalog
Promotion #852

• Locks • Lighting • Bar Rail • Fasteners
• Kitchen organizers • Shelf brackets and much more...

Woodworker's Hardware
woodworkershardware.com
or 1-800-383-0130



GUIDE KITS | STABILIZERS | BLADES | TIRES | AND MORE



# "CARTER GUIDES MADE MY BANDSAW FUN AGAIN!"

INCREASE CUTTING SPEED & ACCURACY.

**FREE!**
"Bandsaw Tuning" DVD with purchase of Guide Kit or Stabilizer.™

Limited Time Offer:
Use Promo Code BHGD1.
Code must be included with order.

carter products
BANDSAW UPGRADES

See Carter Products at The Woodworking Shows in 23 cities. thewoodworkingshows.com

carterproducts.com/bandsawfun | 888.622.7837



# CNC FOR ANY SIZE SHOP

PRSalpha 120-60

Whether you're a weekend woodworker looking to expand the scope of your projects or a serious craftsman ready to turn your passion into a business, ShopBot has an affordable, American-made solution for your woodworking needs. Our PRSstandard CNC system gives you the performance necessary to take your designs to the next level, while our PRSalpha offers professional-grade speed, power and accuracy at a fraction of the cost of the big iron machines.

To get you up and running as quickly as possible, we offer training at our headquarters or in your facility, and, with some of the best technical support in the industry and a worldwide peer network, help is never more than a phone call or a mouse click away.

Give us a call or visit us online to find out how you can become a ShopBotter.

ShopBot®
What will you make today?

www.shopbottools.com
info@shopbottools.com
888-680-4466

Help ShopBot design the next generation of digital fabrication systems.
Visit http://bit.ly/80nGt8 for more information



WD 1002

The NEW EAGLE AMERICA
Since 1948

The World's Router Bit Source!

Over 2,000 Router Bits and Sets

Over 5,000 woodworking items!

Request your FREE color catalog

EagleAmerica.com
1-800-872-2511

Flexcut Kreg freud PORTER-CABLE
FESTOOL Jorgensen OLSON

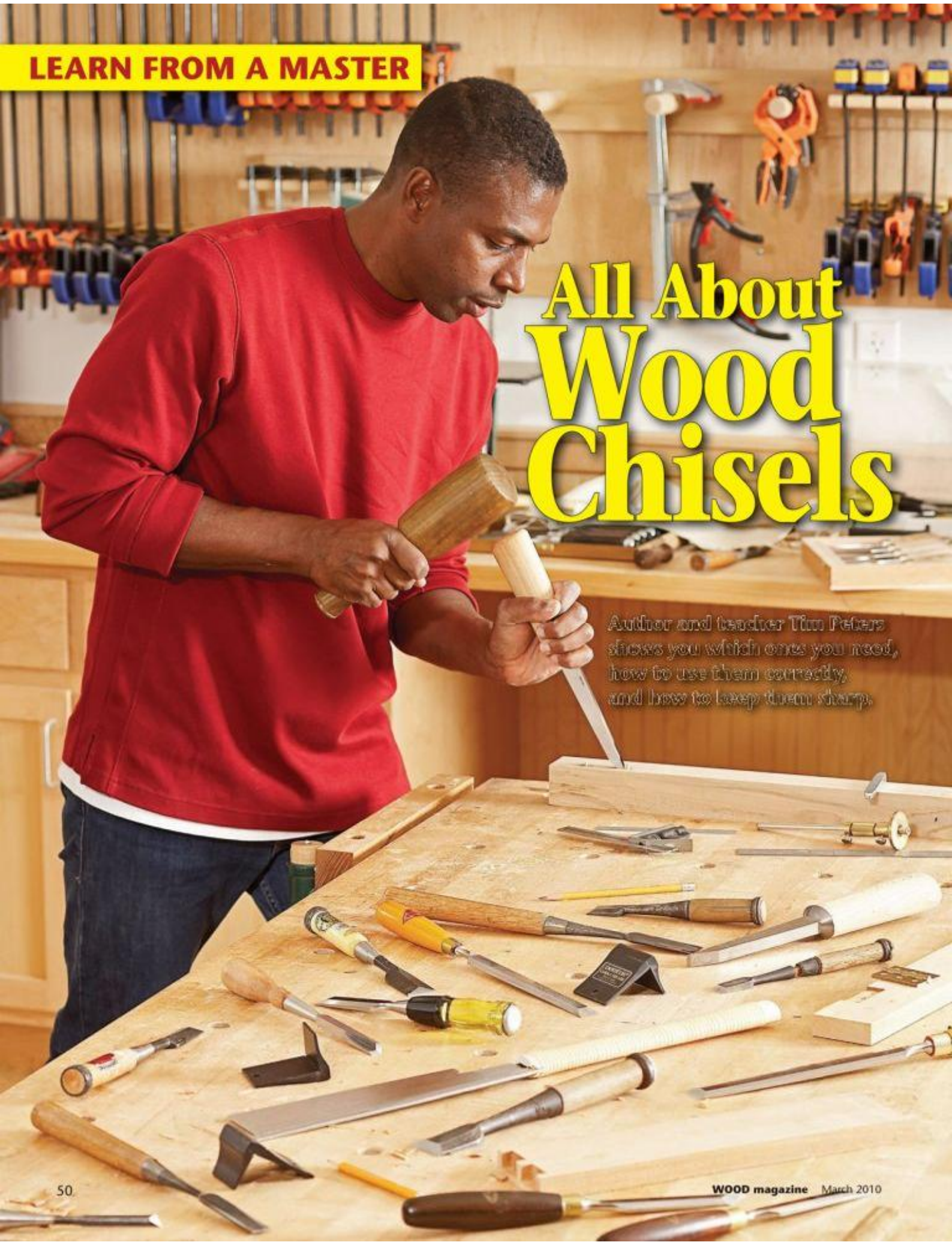
Special Offer FREE Shipping
on your internet order of $75, prior orders excluded
- now through 4/30/10 -

To redeem visit: www.EagleAmerica.com/WD1002

LEARN FROM A MASTER

# All About Wood Chisels

Author and teacher Tim Peters shows you which ones you need, how to use them correctly, and how to keep them sharp.



At the root of all woodworking lies a simple notion: A sharp tool can quickly and effectively change the shape of wood. And for several millenia, wood chisels have served as one of the fundamental tools for cutting and shaping wood. In the classes I teach, we use them for chopping mortises, paring tenons, cutting dovetails, carving reliefs, shaping table and chair legs, and so on. In this article, I'll focus on getting more from the most common furnituremaking chisels.

## First, understand the blade/handle connections

Chisels come in primarily two styles: socket chisels or tang-type chisels, as shown at *right*. That means the handle either slips into a tapered hollow socket, or it slips over a tapered square or round tang milled into the blade. One big difference between the two is the relative strength of the blade-to-handle connection. Both types can be struck with a mallet, but socket chisels prove best for heavy chopping and prying. That's because the force of mallet blows gets dispersed around the rim of the socket and evenly down the shank to the cutting edge. The more you strike it, the tighter its handle fits in the socket. This style of chisel also resists bending and fracturing in situations, such as mortising, where the tool might be subjected to prying forces or twisting as you retract the cutting edge from a tight joint.

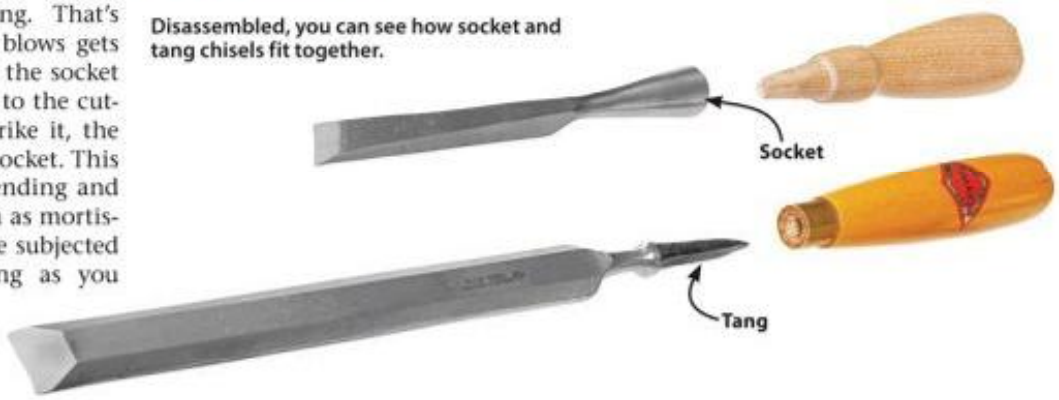
At the top of the handle where you strike it, manufacturers often place a metal ring, known as a ferrule, or a leather washer to protect the wood endgrain from splintering. Over time the wood mushrooms over the ferrule, further protecting the integrity of the handle shaft. Socket chisels typically cost about one-and-a-half times the price of tang chisels because they're more complex to manufacture.

Tang chisels, on the other hand, feature a 2"- to 3"-long tang, typically with four sides that taper to a point. The tang almost always has a bolster (or shoulder) for the handle to seat against and absorb mallet strikes. Many manufacturers reinforce this area with a metal ring at the neck of the handle to resist splitting. The handle top on most of these chisels features metal rings, leather washers, or metal striking caps, meant to absorb and distribute mallet blows.

**Tim Peters**, master furnituremaker and professed hand-tool junkie, heads the woodworking department at Orange Coast College in Costa Mesa, California. This is his third article for *WOOD*® magazine; his first two were reviews of block planes and shoulder planes.

### CHISEL ANATOMY

**Disassembled, you can see how socket and tang chisels fit together.**




## Bench chisels: Buy these first

Fortunately, most woodworkers don't need dozens of specialized chisels. You can do the vast majority of your work with just a few common bench chisels. Bench chisels have 4"- to 6"-long blades with flat backs and beveled edges, as shown at *right*. The beveled edges make it easier to reach into tight spaces, such as narrow mortises or dovetail sockets. The cutting edge on a bench chisel typically has a 25° bevel, steep enough to resist wear, but too acute for heavy prying.

Butt chisels are a subset of bench chisels, with similar design but shorter blades and handles. These chisels work great for tasks where a longer chisel proves obtrusive or unwieldly, as with joinery on small projects, such as jewelry boxes or toys. I use butt chisels when making shallow hinge mortises, shown on *page 53*, because the short lengths give me greater control.

For most home woodworkers, I suggest you buy a set of bench chisels with at least three or four different widths from ¼" to 1". You can do great work with a set of Stanley or Irwin chisels (available at home centers and hardware stores) as long as you keep them sharp. These will dull quicker than chisels made of harder steel, so be prepared to sharpen more often. (Learn sharpening techniques, *page 54*.) If you prefer professional-quality chisels made with harder steel, see "Chisel Sources" on the *next page*.

## Paring chisels handle fine-cutting tasks

These chisels should never be struck with a mallet. Most paring chisels use tang-style construction, although any really sharp chisel could be employed to do some paring, slicing off thin layers of wood as you fine-tune a joint. Chisels specifically designed for paring usually have slender 6"- to 8"-long blades used for reaching deep into joints. Paring chisels typically have steeply beveled edges, narrow necks (the transition area between blade and handle), and wooden handles with rounded ends, made to seat comfortably in your palm. Chisels used exclusively for paring oftentimes have small-diameter tangs, but don't have washers, rings, or caps. Paring cuts should be made only with hand pressure pushing the tool.

You'll find a more acute bevel angle, 15° to 20°, on the cutting edge. This provides a sharper edge for cutting precision, but the trade-off is an edge that is not as durable, particularly when paring harder woods, such as white oak, hard maple, or many exotics. Buy paring chisels if you do joinery that requires fine tuning, such as dovetails, box joints, or mortise and tenons. When you are ready, buy a ½" and 1" pair; add sizes as your needs grow.

## Opt for specialty chisels only when needed

You might find these specialized chisels handy for your home shop.

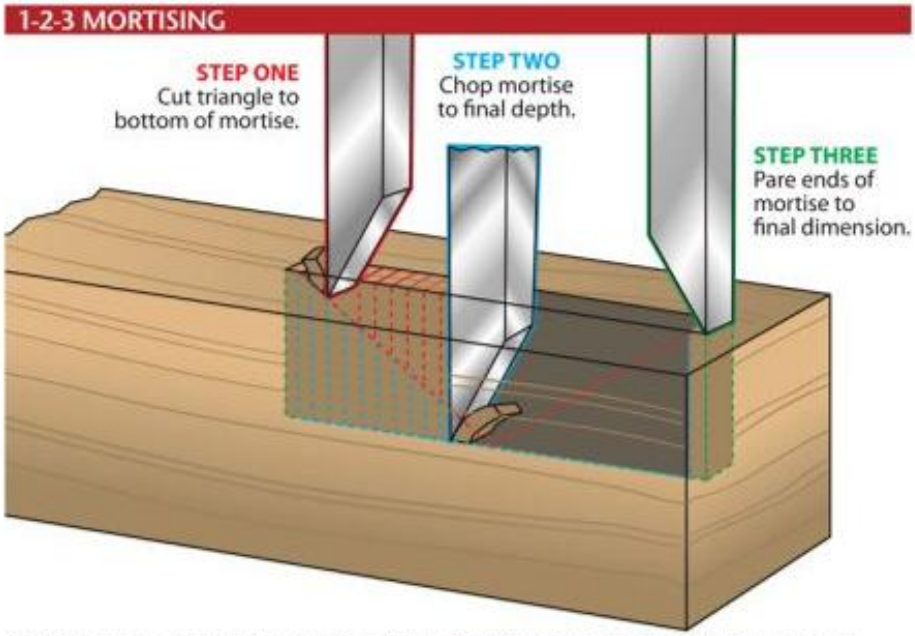
■ **Mortising chisels.** Whether you're a hand-tool traditionalist or you just don't want to fuss with setting up a mortiser or drill press, you can, with a little practice, chop mortises by hand with these heavy-duty chisels. Beefy, tapered blades separate these chisels from others. The back of the blade is often slightly wider than the front to keep it from getting wedged or bruising the side walls of a mortise. And the cutting edge, with a bevel in the 30° to 40° range, withstands hard mallet blows without breaking down the tip.

You can also pry with these chisels after sinking the tip into the wood to break loose the chips, as shown *below*. Mortising chisels connect to the handles, which are usually elliptical in shape, with a large, stout tang and substantial bolster for the handle to rest against.

■ **Corner chisels.** These prove handy for squaring up corners of rabbets, dadoes, grooves, and mortises when struck by a mallet. So if you don't have a dedicated mortiser or mortising chisel, you can drill out most of the waste at the drill press, and then clean up the corners with one of these. Same goes for stopped channels made with a router.

■ **Crank-neck chisels.** Marrying the best features of a hand plane and a paring chisel, a crank-neck slices away material while you rest the chisel blade flat on the workpiece. The bent handle lets you grip it comfortably without scraping your knuckles on the wood. These work well for shaving off proud wood plugs or dowels and for removing glue squeeze-out from inside corners.

■ **Skew chisels.** Another form of paring chisel, the angled cutting edges on these work great for reaching into difficult areas to trim away material. I use them for paring dovetail sockets, shown *next page*, because I can hold the back flat against a surface and ensure a true cut. It's best to get right- and left-facing models for use on opposing sides of a socket.




**To hand-cut a mortise with a mortising chisel, begin by chopping out chips between your scribed lines, leaving ⅛" at the ends. Move the chisel about ⅛" at a time, and strike it with a mallet. Then pry out the chips. Make a triangular pattern to the desired depth; then begin back-cutting the rest to match that depth. Finish by cutting away the remaining ⅛" at each end.**

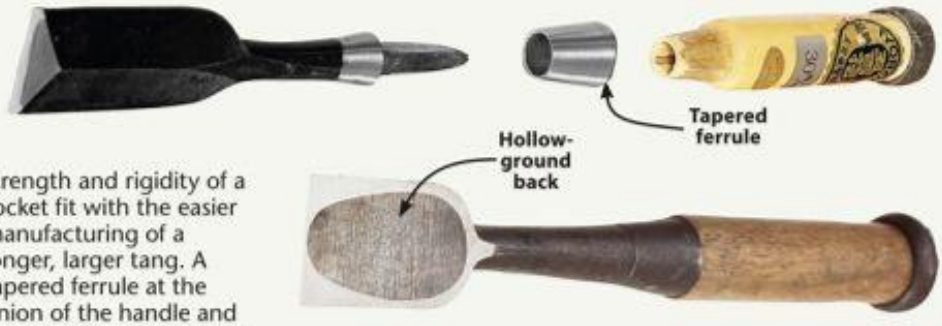
### Chisel Sources

**Tools For Working Wood:** 800-426-4613, toolsforworkingwood.com
**Traditional Woodworker:** 800-509-0081, traditionalwoodworker.com
**Garrett Wade:** 800-221-2942, garrettwade.com
**Lie-Nielsen:** 800-327-2520, lie-nielsen.com
**Japan Woodworker:** 800-537-7820, japanwoodworker.com

## Consider Japanese chisels for durable performance

The Western-style chisels I've shown you up to now originated in Europe and are perfectly adequate for most work. But in my opinion, Japanese chisels have no equal. Here's why. Japanese chisels feature two layers of steel forged together into the blade: a harder, thin layer laminated behind a softer, thick front. As a result, the harder portion holds its sharp cutting edge longer than most Western-style chisels. Japanese-chisel manufacturers also grind a hollow back onto the blades, as shown at *right*, so you have less material to remove when lapping the back flat.

At the handle end, these chisels use a hybrid socket-and-tang fit that gives them the benefit of both basic types of chisel construction. They combine the strength and rigidity of a socket fit with the easier manufacturing of a longer, larger tang. A tapered ferrule at the union of the handle and blade serves as the socket for the handle's mating wood end, while also keeping the handle from splitting during mallet strikes or prying.




Because Japanese chisels are handmade from high-quality materials, they can cost $100 or more per chisel. Before using a new Japanese chisel, you'll have to fit and seat the tapered ring at the top of the handle. The chisel's instructions explain how to do this. As a basic set I recommend chisels with blades 3, 6, 9, 12, and 15mm wide. This should be adequate for most cabinet- and furnituremaking joinery.

## Chisel out a perfect hinge mortise in 3 easy steps

Begin by making a series of angled "chops," keeping back 1/16" from the ends and back.

Hold the chisel parallel to the edge of the workpiece and pare away the chips.

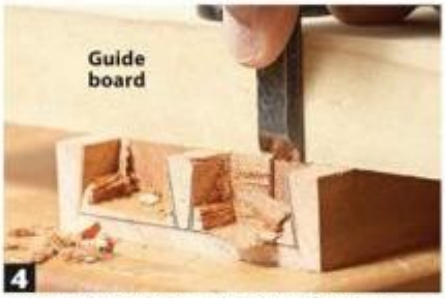
Clean up the bottom and perimeter walls with light cuts until the hinge fits snugly.

## Hand-cut half-blind dovetails with only a pair of chisels and a mallet

Remove the socket waste with a bench chisel, keeping 1/16" from the scribed sides and back.

After making a vertical cut, counter with a horizontal cut to remove the chip.

Pare the angled sidewalls down to the bottom of the sockets.



Using a clamped-on guide board, pare away the final material from the back walls.

Finally, use a skew chisel to clean out the corners to finish the sockets.

Now you have two perfect pin sockets for a project part, such as an inset drawer front.

# Your chisels will only be as good as your sharpening makes them

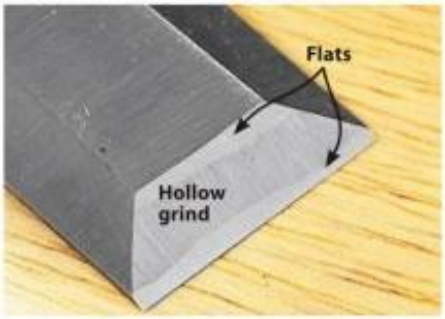
I see several hundred new students in my classroom each year, all anxious to start chopping wood. But there's a little tough love waiting for them: I provide students with the least expensive, home-center chisels available for two reasons. First, any accidental damage is no big deal because they cost only a few bucks to replace. Second, and most important, these chisels have relatively soft steel blades, so they dull quickly. Why's that a good thing? Because frequent sharpening ingrains in their minds and muscle memory correct sharpening techniques, which are the same regardless of the chisel quality. And having a *sharp* chisel always trumps having an *expensive* chisel.

No matter what technique or mechanism you use to sharpen your chisels, get comfortable using it and return to it regularly to touch up your tools. I favor sharpening freehand on waterstones—years of sharpening experience mean I don't need fancy machines or gadgets. And, if treated properly, the stones last for years. But if you prefer to use a honing guide to hold your chisels at the correct bevel angle, or maybe a motorized sharpener, by all means do it. They all work if you take the time to get familiar with them.

Always start out a new—or, dare I say it, an abused—chisel with a hollow grind on a benchtop grinder, as shown *below left*. I use 36- and 60-grit wheels because I want to shape the steel quickly and avoid heating up the tools. Overheating, usually indicated by a blue hue of the steel, causes the cutting edge to dull more quickly. And I prefer a hollow-ground bevel because it's easier and quicker to sharpen and touch up on the stones. (With less steel dragging across the stone, there's less friction, and the bevel's two-point contact helps to maintain correct angle orientation on the face of the sharpening stone.)

## START WITH A HOLLOW GRIND

Holding your chisel against the tool rest for leverage, grind a recess on the bevel that's perpendicular to the blade sides.




## FLATTEN THE BACK

Slide the chisel forward and back on the wet sharpening stone. Latex gloves keep the soupy swarf from dirtying your hands.

After making the hollow grind, lap the back face of the chisel to make it perfectly flat, as shown *above*. You only need to do this on the bottom two inches. Some chisel work won't require a flat back, but other tasks, such as mortising and paring, do; so just get in the habit of lapping. Start with a coarse stone (800 grit) and repeat on several finer grit stones. This only needs to be done again if the back goes out of flat or if you have used up the flat portion of the chisel blade.

Next, sharpen the cutting edge on stones or sandpaper grits. Begin with a coarse grit (800 waterstone, gray Arkansas oilstone, or 150 sandpaper) to define the bevel, creating two narrow, flat points of contact above and below the scooped-out hollow grind (*left*). Progress through several finer grits, up to 15,000 stone or 1,000 sandpaper, to hone the bevel to a razor-sharp edge. I go a step further and burnish the bevel on brown butcher paper or grocery bags.

Although it's not necessary, I like to add a secondary microbevel, about 1° steeper than the main bevel, for an even finer edge. To do this, after you've finished the first bevel, go back to an 8,000-grit stone or 1,000-grit sandpaper, raise the chisel slightly off the bevel so only the tip touches, and gently give it a few strokes. If you are anticipating doing a lot of heavy chopping or are working with a particularly hard or abrasive timber, such as white oak or silica-rich teak, add a secondary bevel. The more obtuse microbevel will dramatically increase the edge-holding durability of the chisel in these situations.

## HONE THE BEVEL

The texture of common butcher paper produces a mirror finish and a cutting edge that's beyond scary-sharp.

*"If I had eight hours to chop down a tree, I'd spend the first six hours sharpening my ax."*
—Abraham Lincoln

The more you sharpen, the more you'll dish out the stones. Keeping the stones flat guarantees your chisels' edges remain flat. Use a flattening stone to remove the high spots. I probably do this more than I need to, but I'm in the habit of flattening every stone before I sharpen with it.

Written by **Tim Peters** with **Bob Hunter**
Illustration: **Tim Cahill**

## MORE RESOURCES

### FREE VIDEO

- Watch a FREE video of sharpening with sandpaper at woodmagazine.com/sharpenvid

### RELATED REVIEW

- For a small fee, download a review of motorized sharpeners and handheld honing guides at woodmagazine.com/sharpeners. $

OSBORNE
Wood Products, Inc.

*Elegance*
*Quality*
*Impeccable Designs*

866.849.8876
WWW.OSBORNEWOOD.COM

Laser Technology for Your Shop

Starting at $7,995!

MADE IN USA

Epilog Laser
1.888.437.4564
sales@epiloglaser.com
www.epiloglaser.com/bhg.htm

EPILOG LASER

ToolOrbit.com

BUY BETTER · BUILD BETTER

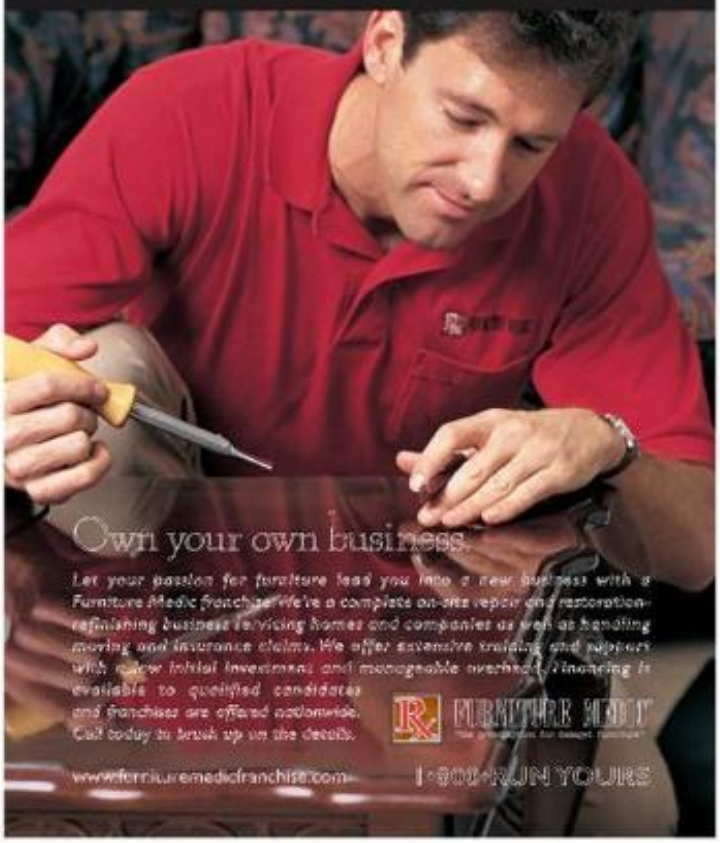
EXTENSIVE RANGE | LOWEST PRICES

AUTHORIZED RETAILER FOR

JET
POWERMATIC
Milwaukee
DEWALT
PORTER CABLE
DELTA

www.ToolOrbit.com | 888-722-8299

Refinish Your Future.



Own your own business.

*Let your passion for furniture lead you into a new business with a Furniture Medic franchise! We're a complete at-site repair and restoration-refinishing business servicing homes and companies as well as handling moving and insurance claims. We offer extensive training and support with a low initial investment and manageable overhead. Financing is available to qualified candidates and franchises are offered nationwide. Call today to brush up on the details.*

FURNITURE MEDIC

www.furnituremedicfranchise.com

1-800-RUN YOURS

SHOP TESTED

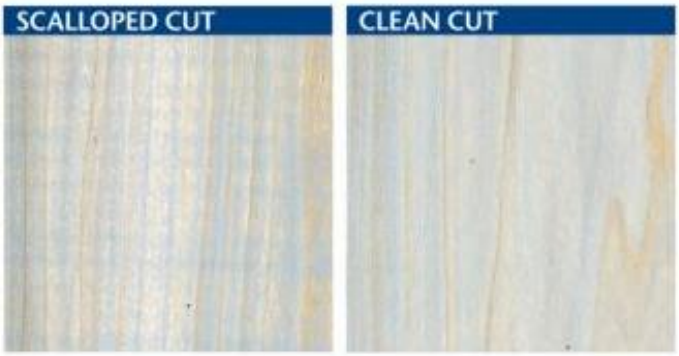
# Benchtop Planers

**Here's the skinny on thickness planers: They'll all dimension wood accurately, but the best machines leave less cleanup work for you to do afterward.**

Think of buying a benchtop planer as an investment that pays dividends in lumber savings. By using it to surface less-expensive, roughsawn stock, you free yourself from buying costly presurfaced lumber. Although these machines get the job done, don't mistake them for heavy-duty planers with beefy 3-hp and larger motors, which can chew through hardwoods quickly and handle deeper cuts without bogging down. Benchtop planers have universal motors and typically work best removing 1/16" or less at a time, thus creating longer work time to surface lumber. That said, a benchtop model works great for most home shops that aren't working on a production-like schedule. To make sure you get the right planer, we put 11 benchtop models through extensive testing to sort the smooth operators from the roughnecks.

## Give top priority to cut quality and snipe

Only a few of the tested planers do not create significant work for you in the form of power sanding or heavy scraping to remove scallop marks or snipe. (Snipe is the scooplike gouges on the ends of a board caused by the cutterhead when gripped by just one feed roller.)




To check cut quality, we ran poplar and red oak through each machine, removing 1/32" with each pass. We then rubbed chalk on the just-planed faces to reveal scallop marks, as shown *above left*, caused by the cutterhead knives. Three

machines produced grade-A surfaces: DeWalt's DW734 and DW735 and Makita's 2012NB. With sharp knives, these planers turned out boards that needed only light sanding to remove any barely noticeable scallops.

The DW735 is one of two machines with two feed speeds. (General International's 30-010 M1 is the other, but its cut quality merits only a B grade.) DeWalt's faster speed, 24 feet per minute (fpm), works best for rough dimensioning, while the 14-fpm rate excels at final finishing. As you'd expect, we got the best surface quality at the slower speed. But even the faster speed's cut quality exceeds that of most other models.

Although four machines have three-knife cutterheads and six have two knives, we could not tie cut quality to cutterhead design. For example, Makita's two-knife planer outperforms two three-knife machines for cut quality. The bottom line: Focus on a machine's cut quality more than its specifications.

By contrast, with most models, it took sanding with coarse sandpaper to remove the scallops, and then with finer grits to erase the sanding scratches just to match the unsanded surface quality of the DeWalt and Makita planers.

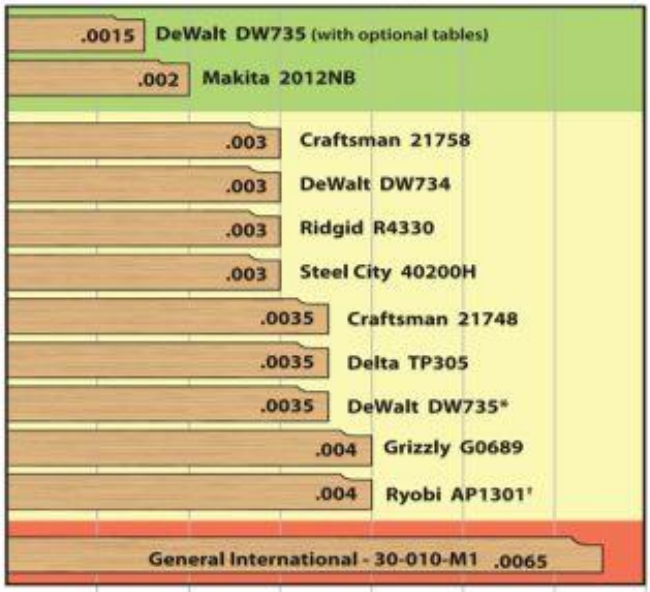
As for snipe, we could not get any of the planers to crank out snipe-free boards. When we tested all of them as equipped from the factory, the Makita led the field with snipe so minimal it was hard to see, and removed easily with light sanding. (See chart, *above right*, for snipe comparisons.) Out of the box, the DeWalt DW735 sniped like most of the planers in the test (.0035"). But when we added and fine-tuned the optional infeed and outfeed tables ($50), the DW735 nudged ahead of the Makita with a mere .0015" of snipe. Both of these units feature cutterhead carriages that lock on their posts automatically when a board engages the infeed roller, preventing the carriage from moving up or down during the cut.

Four planers sport manual-locking carriages, which you engage before each pass and then disengage before adjusting the depth again. But we found no advantage to this feature, as machines so equipped sniped about the same whether we engaged the locks or not.

Of the 11 planers, only the General International sniped so deeply we had to forego sanding and simply cut off the ends of the boards. To reduce snipe, we adjusted the infeed and outfeed tables on each unit (except the Ryobi AP1301, which has none) to elevate the ends about a penny's thickness above the planer table. (Go to woodmagazine.com/woodvision to watch a free video showing this technique.) Only Makita recommends this technique in its owner's manual. Most others concede that snipe is unavoidable and you should just cut off the sniped ends.

## Most planers create snipe you can live with

We decreased snipe in nearly all the planers by making adjustments to the infeed and outfeed tables, if so equipped.

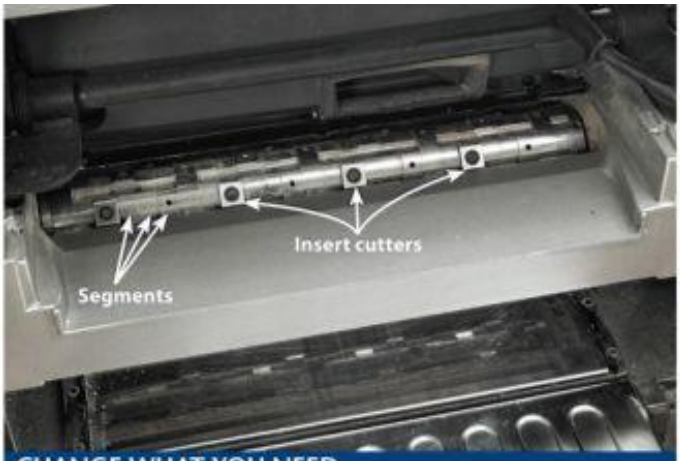



Snipe measured in inches after taking ½"-deep cuts in 12"-wide poplar and maple; average of infeed and outfeed snipe on three test cuts.
* Tested without optional infeed/outfeed tables.
† No infeed/outfeed tables available for this model.
Snipe shown on the boards in this chart is magnified for illustration purposes.
light sanding required; moderate power sanding required; cut snipe off.

**Magnetic knife holders, like this on the DeWalt DW734, keep your fingers clear of the razor-sharp edges when changing knives.**

## Features that separate these planers

• **Changing knives.** Depending on how much you plane and what materials you use, your frequency of changing




**CHANGE WHAT YOU NEED**

**With the Steel City, you rotate or replace only the cutters that need it. But this cutterhead doesn't lock; you have to hold it steady.**

**A GOOD SAFETY NET**

**Depth stops work like rotating turret stops on a plunge router. To fine-tune the accuracy, simply adjust the stop bolt up or down.**

knives will vary. But the process should be easy and intuitive. Here's where an automatic cutterhead lock helps, preventing the head from rotating while you remove the bolts and knives. Only Delta's TP305 and Steel City's 40200H lack this feature.

All the straight-knife cutterhead models, except Ryobi, feature self-indexing, double-edged knives, as shown on *previous page*. Ryobi's knives, though double-edged, are not self-indexing. Changing knives on this planer proved to be the most difficult and time-consuming in the test.

The Steel City unit comes standard with a segmented cutterhead, shown *above*, composed of 26 ½"-thick rings on a shaft. Each segment holds a high-speed-steel insert cutter, each with four cutting edges. It's not a true spiral cutterhead because the cutters do not sit at a slight angle and make a true shearing cut. The chief advantage to this head is that, should you nick one or more cutters, you simply rotate the affected inserts a quarter-turn for a fresh cutting edge. No need to replace a full set of knives. To check knife durability, we accelerated dulling by planing particleboard—an abrasive material you should not purposely plane—until the original cutting edge showed obvious wear. We found that Steel City's inserts remained sharp at least 33 percent longer per edge than all but one competitor, beating runner-up Makita by 25 percent.

Craftsman's 13"-wide 21748 comes with a three-knife cutterhead, but offers a segmented head similar to Steel City's as an option ($250). We tested both heads and found their cut quality, snipe, and edge wear so similar, we can't make an argument for the upgrade.

• **Setting cutting depth.** Eight machines feature a gauge, similar to the one shown *bottom left*, that indicates the amount of material being removed with each pass. These gauges help you avoid taking too large a bite, which might result in tear-out or deeper snipe. Most work well and read easily. However, Makita does not have a scale on its gauge, making it difficult to determine the depth of cut accurately.

We like the preset depth stops included on seven of the planers; Craftsman 21758, Delta, Makita, and Ryobi don't have them. These adjustable stops, shown *above*, prevent planing a board thinner than a targeted thickness, a handy feature when planing multiple project parts to identical thickness.

• **Dust collection.** These planers generate loads of chips that make a mess if you don't hook up a dust collector or vacuum. The DeWalt DW735 and Grizzly feature built-in fans that suck chips away from the cutterhead and blow them out the dust port for the most effective dust collection. This proves helpful if your planer sits near the far end of your dust-collection system and needs that boost.

Most of the planers have dust hoods with 4" ports, but the Craftsman 21758 has only an unusual 2" port, and the Grizzly and Ryobi have just 2½" ports sized for shop vacuums. Craftsman's 21748 has 2", 2½", and 4" port sizes, and the DeWalt DW735, Ridgid, and Steel City have 2½" and 4" sizes. The

**SHAVE A LITTLE OFF THE TOP**

**Material-removal gauges help you set the cutting depth before plunging the wood into the rotating cutterhead.**

**DUELING DUST SHOWDOWN**

**Four planers sport both 2½" and 4" dust ports (shown on the Ridgid) so you can easily hook them up to a shop vacuum or dust collector.**

Delta, General International, and Makita do not come with a dust hood, but you can buy optional ones for about $25.

• **Power.** To our surprise, power was not a critical factor. All planers showed enough oomph to handle even ⅛"-deep cuts in 12"-wide hard maple and oak. The Ridgid bogged down slightly, but still handled every job we threw at it.

• **Noise.** Makita makes the quietest planer, running at 90 decibels (dB) under no load and 94dB while planing 12"-wide red oak. But even those noise levels rank well above the threshold (85 dB) where you should be wearing hearing protection. The two Craftsman models were loudest at 102dB planing the oak. The 21748 dropped 7dB, however, with the segmented cutterhead. Bottom line: No matter the machine, wear hearing protection at all times.

## A machine-by-machine comparison

### Craftsman 21758, $280 800-383-4814, craftsman.com

**High Points:**

- Auto-locking two-knife cutterhead and magnetic tool make knife changes easy.
- The smooth, flat granite table won't warp.

**Low Points:**

- Short infeed and outfeed tables (7") provide less support for long workpieces.
- No preset thickness stops and no depth-of-cut gauge.
- It comes only with a 2" dust port.
- At 99 dB running without load, it's the loudest in the test.

### Craftsman 21748, $500 800-383-4814, craftsman.com

**High Points:**

- Auto-locking cutterhead makes knife changes easy with the standard three-knife head.
- Preset thickness stops were accurate and needed no adjustment.
- The smooth, flat granite table won't warp.

**More Points:**

- The magnetic T-wrench helps lift the knives from the cutterhead, but the magnet also grabs onto the spring-loaded gib plate, which doesn't come out, making it tricky to free the knives.
- The dust hood includes 2", 2½" and 4" ports, but the narrow chute chokes a collector using a 4" hose.
- The optional segmented cutterhead ($250) features easy-to-change steel square inserts, but the auto lock doesn't work with it, and we saw no improvement in performance over the three-knife cutterhead.

### Delta TP305, $280 800-223-7278, deltaportercable.com

**High Points:**

- It produced the best cut quality among sub-$300 planers.
- It comes with a test-best five-year warranty.

**Low Points:**

- Short infeed and outfeed tables (7") provide less support for long workpieces.
- No preset thickness stops and no depth-of-cut gauge.
- Cutterhead knives wore quicker than most.
- Dust hood with 4" port is optional (part #50-359, $25).

**More Points:**

- The magnetic T-wrench helps lift the knives from the cutterhead, but the magnet also grabs onto the spring-loaded gib plate, which doesn't come out, making it tricky to free the knives.

### DeWalt DW734, $400 800-433-9258, dewalt.com

**High Points:**

- Auto-locking cutterhead and magnetic tool make knife changes easy.
- Three-knife cutterhead produces superior cut quality.
- It comes with a three-year warranty.
- Depth-of-cut gauge and thickness scale are accurate and easy to use.

**Low Points:**

- Power switch does not have a removable lock-out key for safety.

**More Points:**

- After slight adjustments, the preset thickness stops proved accurate.
- Carriage lock must be locked and unlocked by hand.

### DeWalt DW735, $650 800-433-9258, dewalt.com

**High Points:**

- Auto-locking cutterhead and magnetic tool make knife changes easy.
- Three-knife cutterhead and two feed speeds produce superior cut quality (at slowest speed).
- One of only two tested machines with an auto-locking carriage, which helps reduce snipe.
- A built-in chip-ejection fan clears debris better than any other machine. And it has 2½" and 4" dust ports.
- Depth-of-cut gauge and thickness scale are accurate and easy to use.
- It comes with a three-year warranty.

**Low Points:**

- Power switch does not have a removable lock-out key for safety.
- Without optional infeed and outfeed tables (part #DW7351, $50), this planer snipes more than twice as much.

**More Points:**

- After slight adjustments, the preset thickness stops proved accurate.
- Optional infeed and outfeed tables have side-mounted leveling crews, making it easy to all but eliminate snipe.

## General International 30-010 M1, $650 888-949-1161, general.ca

**High Points:**

- Height-adjustment handwheel mounts to the top of the unit on either the left or right side, allowing you to locate it to suit your needs.

**Low Points:**

- The infeed and outfeed tables have rollers at the ends that are proud of the table surface and are the most difficult to adjust, resulting in test-worst snipe we could not control.
- Despite two feed speeds, cut quality from the two-knife cutterhead was middle-of-the-pack.
- When planing stock as thin as ⅛", this machine creates excessive chatter and chews up the workpiece.
- Depth-of-cut scale and preset thickness stops proved the most difficult to use.
- Dust hood with 4" port is optional (part #30-020, $26).

**More Points:**

- Auto-locking cutterhead and magnetic tool make knife changes easy. But you'll do that more often because this unit's knives wore quickest in our accelerated wear test.

## Grizzly G0689, $375 800-523-4777, grizzly.com

**High Points:**

- Height-adjustment handwheel mounts to the top of the unit on either the left or right side, allowing you to locate it to suit your needs.
- Depth-of-cut gauge is accurate and easy to use.

**Low Points:**

- Cut quality proved slightly better than fair.
- Short infeed and outfeed tables (7") provide less support for long workpieces.
- The depth scale is marked in confusing increments, making it more difficult than others to use.
- There's no place on the machine to store the knife-changing T-wrench.

**More Points:**

- A built-in chip blower clears debris into an included collection bag, but it has only a 2½" dust port if you choose to hook to a dust collector.
- After slight adjustments, the preset thickness stops proved reliable.

## Makita 2012NB, $530 800-462-5482, makitatools.com

**High Points:**

- Its two-knife cutterhead produced superior cut quality.
- Infeed and outfeed tables have side-mounted leveling screws, making it easy to all but eliminate snipe.
- Auto-locking cutterhead and magnetic tool make knife changes easy.
- Its knives showed the longest durability among straight knives and second overall.
- At 90 dB no-load, it's the quietest in the test.

**Low Points:**

- No preset thickness stops, and its depth-of-cut gauge lacks a scale.
- Dust hood with 3" port is optional (part #193036-7, $25).

**More Points:**

- This unit has the narrowest width capacity at 12" (the others are 12½" or 13" wide).
- An LED indicator light stays on to alert you that the machine is plugged in.

## Ridgid R4330, $370 866-539-1710, ridgid.com

**High Points:**

- Three-knife cutterhead produced cut quality just slightly below the leaders.
- Auto-locking cutterhead and magnetic tool make knife changes easy.
- It comes with a three-year warranty.
- The dust hood includes 2½" and 4" ports, and has a flip-open exhaust if you don't use a dust collector.
- An extra set of knives can be stored on the planer.
- Depth-of-cut gauge and thickness scale are accurate and easy to use.

**Low Points:**

- This unit bogged down slightly in our power test, although its cut quality was not affected.

**More Points:**

- After slight adjustments, the preset thickness stops proved accurate.

## Ryobi AP1301, $200 800-525-2579, ryobitools.com

**High Points:**

- Depth scale is accurate and easy to use.
- At 53 lbs it's the lightest machine in the test.

**Low Points:**

- Cut quality proved the lowest-scoring in the test.
- There are no infeed/outfeed tables available for this machine, making it impossible to remove snipe, which required moderate power sanding to remove.
- No preset thickness stops and no depth-of-cut gauge.
- Knife changes were the most difficult on this planer because the knives are not self-indexing.

**More Points:**

- The dust hood's only port is 2½", but it has a flip-open exhaust chute if you choose to not use a dust collector.

## Steel City 40200H, $600 877-724-8665, steelcitytoolworks.com

**High Points:**

- The high-speed-steel insert cutters showed the longest durability in the test, and each insert has four cutting edges.
- The dust hood includes 2½" and 4" ports on opposing sides.
- Preset thickness stops were accurate and needed no adjustment.
- It comes with a test-best five-year warranty.

**Low Points:**

- Height-adjustment handwheel is stiff and difficult to adjust.
- The cutterhead carriage lock is difficult to lock and unlock.

**More Points:**

- The depth scale is accurate, but the viewfinder makes it difficult to read.

## Here's what we'd buy

Two planers stood out from the field in this test: The 13" DeWalt DW735 ($650) and 12" Makita 2012NB ($530). Both produced exceptional cut quality that needed little sanding, and both left boards nearly snipe-free, although the DW735 needed its optional infeed and outfeed tables (an extra $50) to do this. The DW735 features two feed speeds, easy-to-use depth stops, a depth-of-cut gauge, and a built-in chip blower powerful enough to clear nearly all chips and inflate the bags on a dust collector by itself. The Makita offers few frills, but exhibited the second-longest knife wear and lowest noise level; however, a dust hood will cost an extra $25.

If you can't pay $500 or more for a planer, we recommend the Ridgid R4330 for $370. Although not the lowest-priced unit in the test, it delivers nice cut quality with manageable snipe, with accurate and easy-to-use scales and gauges. If that's still too steep, consider the Craftsman 21758 for $280. It's a bare-bones unit that thicknesses wood accurately with respectable knife wear, although you will have to sand a little more to clean up board surfaces.

Written by **Bob Hunter** with **Bob Baker**

## New Delta on the way

Delta's venerable 13" planer, model 22-580, has been discontinued and will be replaced later this spring by a similar-sized, three-knife unit (*above*) that will sell for about $450, according to Delta's Bill Harman.

Jet has also discontinued its 13" planer, model JWP13DX, but will not replace it. Instead, Jet has launched 8"- and 10"-wide jointer/planer combination machines ($300 and $400, respectively) as part of its new benchtop line of tools.

## BENCHTOP PLANERS: AFFORDABLE, PORTABLE TOOLS FOR THICKNESSING WOOD

| | | CUTTERHEAD | | | | CAPACITIES, INCHES | | | | | DIMENSIONS | PERFORMANCE RATINGS (5) | | | | | | | ACCESS-ORIES (7) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | PRIMARY | | | SECONDARY | | | | | | | | | | |
| BRAND | MODEL | TYPE OF KNIVES (1) | CUTS PER INCH | FEED RATE, FPM | TYPE OF CARRIAGE LOCK (2) | MAX. WIDTH OF CUT | MAX. WORKPIECE THICKNESS | PRESET THICKNESS STOPS? (YES, NO) | DEPTH OF CUT GAUGE? (YES, NO) | DUST-PORT DIAMETER, INCHES (3) | H×W×L, INCHES (4) | CUT QUALITY | ABSENCE OF SNIPE (6) | OBSERVED POWER | DURABILITY OF KNIVES | EASE OF CHANGING KNIVES | EASE OF USING DEPTH SCALE | EASE OF USING THICKNESS STOPS | EASE OF USING DEPTH-OF-CUT GAUGE | STANDARD | OPTIONAL | NOISE LEVEL, DECIBELS (8) | WEIGHT, LBS | CORD LENGTH | WARRANTY, YEARS | COUNTRY OF ASSEMBLY (9) | SELLING PRICE (10) |
| CRAFTSMAN | 21758 | 2 | 60 | 26 | N | 12½ | 6 | N | N | 2 | 18½×24×24 | B- | B | A | B | A | A | N/A | N/A | H,T | | 99 | 67 | 6'6" | 1 | C | $280 |
| | 21748 | 3 | 96 | 26 | N | 13 | 6 | Y | Y | 2, 2½, 4 | 24½×21½×34 | B- | B- | A | B | B | A | B | A | H,T | C | 97 | 94 | 8'1" | 1 | C | 500 |
| DELTA | TP305 | 2 | 51 | 26 | N | 12½ | 6 | N | N | 4" | 18×20×23½ | B | B- | A- | C | A | A- | N/A | N/A | T | H | 94 | 62 | 6'5" | 5 | T | 280 |
| DEWALT | DW734 | 3 | 96 | 26 | M | 12½ | 6 | Y | Y | 4 | 20×20×33 | A | B | A | B | A- | A- | B | A- | H,T | | 93 | 80 | 7' | 3 | T | 400 |
| | DW735 | 3 | 96/179 | 14/24 | A | 13 | 6 | Y | Y | 2½, 4 | 14×27×19½" | A | B-* / A | A | B | A- | A | A | A | H | B,T | 92 | 92 | 7'4" | 3 | T | 650 |
| GENERAL INT. | 30-010 M1 | 2 | 61/88 | 18/26 | M | 13 | 6 | Y | Y | 4" | 20×22½×37½ | B | D | A- | D | B | A | C | B | T | H | 94 | 84 | 8'5" | 2 | T | 650 |
| GRIZZLY | G0689 | 2 | 70 | 19 | M | 13 | 6 | Y | Y | 2½ | 20½×25½×24½ | C+ | C+ | A | B | A- | B- | A- | A | B,H,T | | 95 | 95 | 7'9" | 1 | C | 375 |
| MAKITA | 2012NB | 2 | 50 | 28 | A | 12 | 6 | N | Y | 3" | 18½×19×30 | A | A | A | A- | A | A- | N/A | C | T | H | 90 | 61 | 7'5" | 1 | C | 530 |
| RIDGID | R4330 | 3 | 96 | 26 | N | 13 | 6 | Y | Y | 2½, 4 | 18½×24×34 | A- | B | B+ | C | B+ | A | A | A | H,T | | 93 | 73 | 10'4" | 3 | C | 370 |
| RYOBI | AP1301 | 2 | 66 | 26 | N | 13 | 6 | N | N | 2½ | 19×23×14 | C | C+ | A- | B | B- | A | N/A | N/A | H | | 93 | 53 | 6' | 2 | C | 200 |
| STEEL CITY | 40200H | H | 29 | 26 | M | 13 | 6 | Y | Y | 2½, 4 | 19½×24×34 | B | B | A | A | A | B- | A | A | H,T | | 92 | 83 | 10'3" | 5 | C | 600 |

1. (2) Two steel straight knives
   (3) Three steel straight knives
   (H) High-speed-steel inserts
2. (A) Automatic
   (M) Manual
   (N) None
3. (*) Dust hoods are optional.
4. (*) Length is 38" with optional infeed/outfeed tables.
5. A Excellent
   B Good
   C Fair
   D Poor
   N/A Not available on this model
6. (*) Grade is an A with $50 optional infeed/outfeed tables.
7. (B) Dust-collection bag
   (C) Segmented insert cutterhead
   (H) Dust-collection hood
   (T) Infeed/outfeed tables
8. Measured under no-load
9. (C) China
   (T) Taiwan
10. Prices current at time of article production and do not include shipping, where applicable.

# Cook Up a Kitchen Makeover in Your Shop

How to affordably breathe new life into a kitchen using tools and skills you already have.

## Before & After

A

A wall oven limits access to the upper cabinets, and the peninsula lacks a snack counter for casual meals.

B

Replacing the wall-oven cabinets with a pantry mirrors the bump-out created by the refrigerator surround.

## PULL-OUTS ADD CONVENIENCE

C

Replacing a narrow cabinet with a pull-out cookie sheet organizer takes advantage of space that was wasted in the old kitchen.

Think of your kitchen as a woodworking project, not a remodeling job, and you'll see how easy it is to bring old cabinets back to life. Your skills can create a fresh look that also boosts your home's value.

The secret: Reuse existing cabinets and only add new ones to solve kitchen layout problems. To prove that's possible, we changed the following in this '50s-era kitchen for less than $2,000:

☑ Replaced the doors and drawers.
☑ Stained the existing face frames to match the new doors and drawer fronts.
☑ Replaced the wall oven with a pantry cabinet [**Photos A** and **B**].
☑ Replaced the cooktop peninsula with a snack counter that houses a range.
☑ Added decorative cabinet accents, such as a simple crown molding, and up-to-date knobs and pulls.
☑ Added pull-out organizers [**Photo C**].

On top of what we did for $2,000, the homeowner added a new dishwasher, sink, faucet, lights, and countertops.

## First, size up the project

Older kitchens, such as the one shown, may have one large site-built cabinet with several doors and drawers instead of individual one- or two-door cabinets. Plan any cabinet alterations, such as the refrigerator surround [**Photos D** and **E**], to avoid removing the entire assembly.

Now decide whether to match new doors and drawers to the existing wood color, or choose a new tone and stain the face frames and end panels to match. In this kitchen, the owner wanted to change it from a drab brown to a more contemporary cherry color.

Finally, list the new or replacement parts you'll need to make. Photocopy "Doors and drawers you'll need to build" on *page 64* (or make one of your own) and list the number and size of each door and drawer front needed. You may be able to apply the old door dimensions to the new ones, but make sure they'll work with the hinges you'll install. We mounted 110° European-style hinges (see **Sources**) to doors with a ¾" overlay because they're easy to install and adjust, and a closed door hides them.

We'll outline the basics of making doors and drawers. You can get detailed information on these and other kitchen makeover skills at **More Resources** on *page 67*. Now, with your lists in hand, it's time to head for the shop.

## Build stylish new doors

Once you add up the number of cabinet doors you'll need, list the part dimensions for each door size. Cut the stiles, rails, and panels to size for each group of doors. Then rout rail-and-stile profiles [**Photo F**] or saw stub tenons and grooves [**Drawing 1**]. Sand and stain the panels, then assemble the doors. Clamp each glue-up for a couple of hours, but allow doors to dry overnight before you sand, stain, and finish them.

To mount European-style hinges on each cabinet door, mark the 35mm (or

## Before & After

D

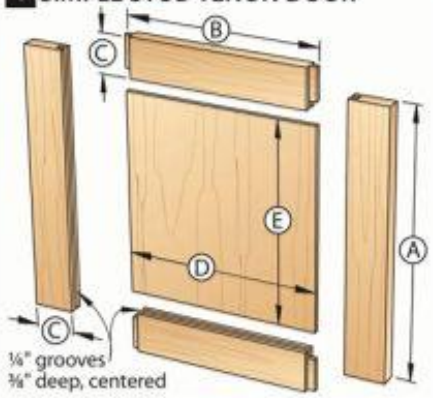
The shiny refrigerator dominates the kitchen and nearby breakfast room. Cabinets of the same depth line up in plain rows.

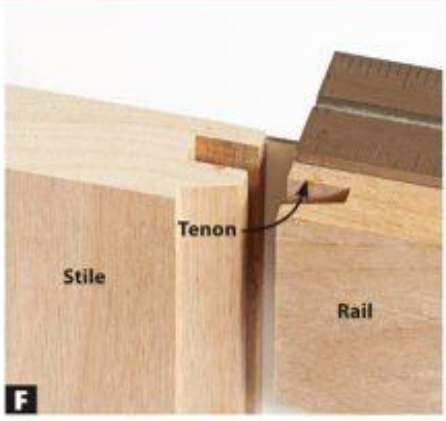
E

Deep cabinets break up the line of wall cabinets, add storage, and ease access to items above the fridge.

## HOW TO CALCULATE CABINET DOOR DIMENSIONS

**1** SIMPLE STUB-TENON DOOR




**To size a door so that ¾" along each edge overlaps the face frame, begin by adding 1½" to the width and height of the cabinet opening. Then do the following:**

- **Cut the stiles (A) to the length you calculated.**
- **Measure the length of the tenon. You can cut tenons on your tablesaw or with a stick-profile router bit. For the profile shown in Photo F, the tenon measures ⅜".**
- **Figure the rail length (B) by taking your frame width, *subtracting* two times the stile width (C) and *adding back* two times the tenon length.**
- **Measure between the bottoms of the stile grooves on an assembled frame. Subtract 1/16" for the panel width (D) and between the rail grooves minus 1/16" for the panel height (E).**

1⅜") hole location and drill mounting-screw pilot holes [**Photo G**]. Drill the hinge-cup hole. Then screw the hinge-cup side to the door.

Next, center the door on the height of the frame opening and drive one screw through each hinge into the face frame [**Photo H**]. Adjust the door alignment before driving the remaining screws.

Finally, mount a pull on each door and add bumpers to the inside of the frame to keep the door from marring the cabinet frame.

## Now, match drawers to your doors

When it comes to drawers, you have two options: Replace only the drawer fronts while saving the drawer boxes or replace the entire drawer. If the existing drawer boxes have held up well and slide smoothly, simply replace the drawer fronts. You can make frame-and-panel drawer fronts to match the cabinet doors using the same method. For solid-wood drawer fronts like the ones we used in this kitchen, cut panels to match your door widths [**Photo I**]. Or, for a stacked-drawer cabinet with no door, duplicate the sizes of the old drawer fronts. Then drill and mount drawer pulls and screw the fronts to the old drawer boxes.

If the drawer boxes fell apart, or if the old drawer lacks a detachable front, build new boxes using our super-simple drawer method. (Watch free videos about building and installing these drawers. See **More Resources**.) First cut drawer-box parts from ½"-thick stock the width of the original drawer sides.

## POSITION HINGES WITH THIS JIG

**Create a jig to suit your hinge type with the hinge-cup marking hole centered on the gauge length. This one has countersinks to accept a self-centering drill bit.**

## SCREW HINGES TO THE CABINET

**A scrap strip clamped to the lower cabinet rail supports the door while you screw the hinge to the face frame. Center screws in the hinge holes to allow the door to be adjusted.**

## Doors and drawers you'll need to build

Total up the replacement doors and drawer fronts of each size you'll need.

**Cabinet door 1**
Door size: _____" wide × _____" long
Quantity: _____
____ stiles, ____" wide × ____" long
____ rails*, ____" wide × ____" long
____ panels, ____" wide × ____" long

**Cabinet door 2**
Door size: _____" wide × _____" long
Quantity: _____
____ stiles, ____" wide × ____" long
____ rails*, ____" wide × ____" long
____ panels, ____" wide × ____" long

**Cabinet door 3**
Door size: _____" wide × _____" long
Quantity: _____
____ stiles, ____" wide × ____" long
____ rails*, ____" wide × ____" long
____ panels, ____" wide × ____" long

**Cabinet door 4**
Door size: _____" wide × _____" long
Quantity: _____
____ stiles, ____" wide × ____" long
____ rails*, ____" wide × ____" long
____ panels, ____" wide × ____" long

**Drawer front 1**
Size: _____" wide × _____" long
Quantity: _____

**Drawer front 2**
Size: _____" wide × _____" long
Quantity: _____

**Drawer front 3**
Size: _____" wide × _____" long
Quantity: _____

**Drawer front 4**
Size: _____" wide × _____" long
Quantity: _____

* Include tenon lengths in rail lengths.

## *REMODELING TIP*

To save money down the road, replace dated appliances. Today's refrigerators and dishwashers operate 30 percent more efficiently than ones sold only 10 years ago. Make appliance decisions before planning your cabinet work to allow for different dimensions.

**MATCH DRAWERS TO DOORS**

**I**

**By installing the cabinet doors first, you can align overlay drawer fronts with doors of the same width.**

**DRAWERS RIDE ON A SINGLE SLIDE**

**J**

**Centered slide parts automatically center the drawer within the opening. The mounting cleat helps the slide fit this cabinet depth.**

**BARE WOOD IN ONE PASS**

**K**

**Unlike sanding, chemical stripper dissolves finish even down inside the pores of the wood, making it easier to stain.**

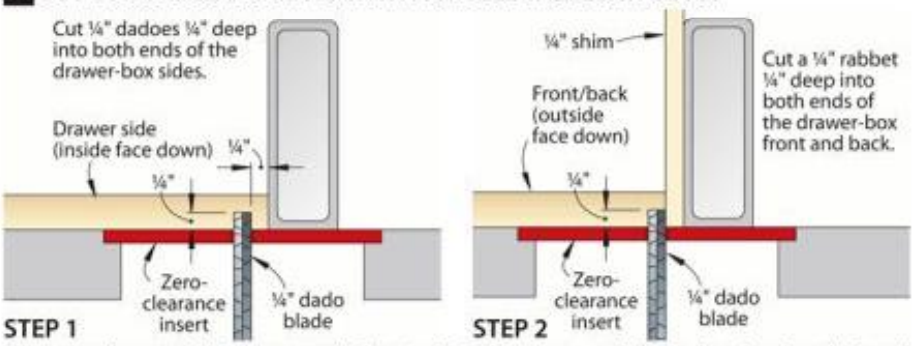
If you're building drawers for a new cabinet, make the drawer box 1" shorter than the cabinet depth and up to ¼" narrower than the height of the drawer opening. Make the drawer box width 1" narrower than the width of the drawer opening to accept side-mounted slides, or ¼" for bottom-mounted slides.

Cut lock-rabbet joints in the drawer parts [**Drawing 2**] and grooves on the inside faces of the sides, front, and back to accept ¼" bottoms. Measure between the bottoms of the grooves from side to side and front to back, and cut drawer bottoms to fit. Working on a dead-flat surface, glue and clamp the drawer boxes together [**Drawing 3**].

To mount the drawer fronts, cut a spacer the distance you want between drawers or between a drawer and cabinet door below. Use double-faced tape to hold the drawer front in place while you screw it to the drawer box from inside.

Finally, install drawer slides. We chose single under-mount drawer slides (see **Sources**) that were easy to install without the pairs of mounting blocks needed for side-mounted slides. First, center the cabinet-mounted portion of the slide within the drawer opening [**Photo J**]; then screw it to the cabinet back and face frame. (We added a cleat to help the slide reach to the back of the cabinet.) Then center and screw the rest of the slide to the underside of the drawer-box front and back.

**2 CUT LOCK-RABBET JOINTS WITH A SINGLE TABLESAW SETUP**



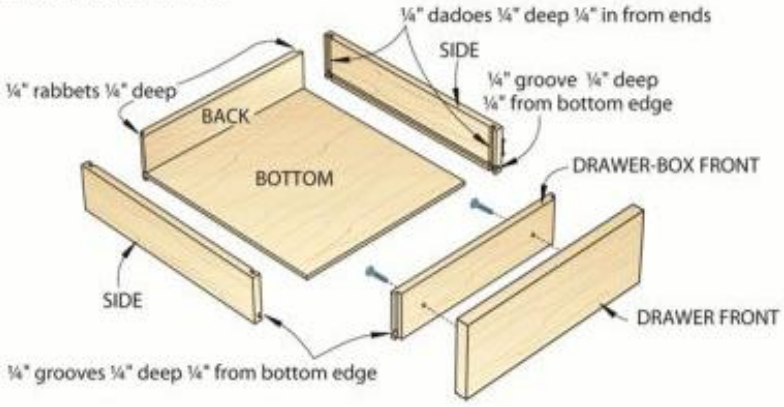

**To test the fence and blade setups in Step 1, dado two scraps and check that they interlock end to end. Then dado both ends of each drawer side. For Step 2, mount a ¼"-thick shim to the rip fence with double-faced tape, and rabbet both ends of each drawer front and back.**

## Put a new face on frames

Now you're ready to transform the face frames. Begin by wiping the old finish with a rag soaked in mineral spirits to remove old polish and cooking grease that could contaminate the surface. Then test the old finish by first wiping it with lacquer thinner. If the finish comes off, remove the rest of it using lacquer thinner while wearing a respirator and with lots of ventilation.

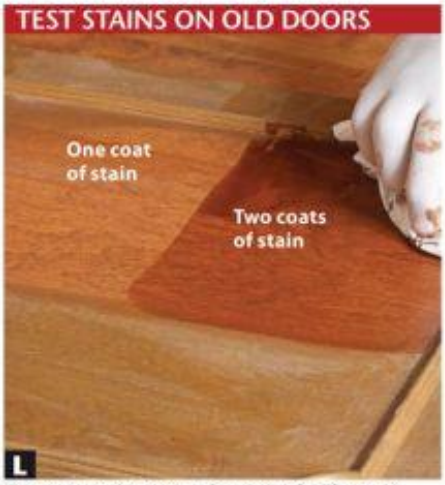
If lacquer thinner doesn't work, you're probably dealing with a varnish that's

**3 DRAWER ASSEMBLY**

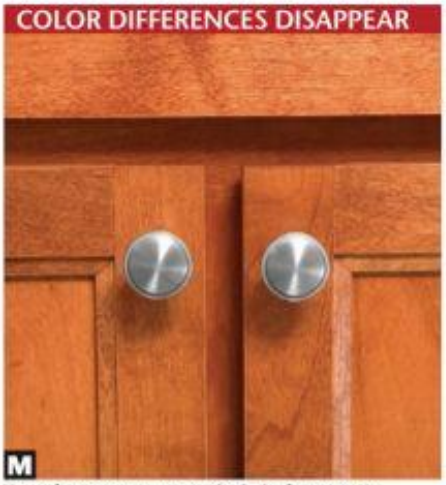



### *REMODELING TIP*

We reused as many kitchen cabinet parts as possible, but in some situations, new parts may save time. For example, we replaced trim panels on the sides of some end cabinets instead of refinishing them. That eliminated time spent stripping finish and sanding the panels. And because they were stained and finished at the same time as the new doors and drawer fronts, they matched better than where we stripped and stained old panels.




First test stripper on the varnish. Then see how different stains and multiple stain coats will look on the face frames.




Face frames can vary slightly from stain colors on doors and drawer fronts and still blend together in the finished kitchen.

Shop-made brackets below the snack counter provide a personal touch. You can also buy ready-to-stain brackets in many styles.

best removed using a gel-type stripper according to the manufacturer's directions [**Photo K**]. Stripping finish also requires good ventilation.

After stripping the old finish, sand the face frames up to 120 grit if you'll leave the wood its natural color, or up to 180 grit if you'll stain it. (A detail sander speeds up this job and reaches into tight corners and face-frame edges.) Finally, hand-sand with the grain using your final grit and clean off all dust.

Now you need to match the color of your old frames and the new doors and drawers. If the old doors were made from the same wood as the face frames, strip and sand the door to use as a test board. Try different sanding grits and stains to fine-tune the color [**Photo L**]. You can tweak stain colors by applying multiple coats or sanding to a lower grit to darken the wood. For lighter color, sand to a grit higher than 180. After you find the right sanding and stain combination, stain the face frames to match your new doors and drawers [**Photo M**].

You'll need a tough, clear finish, such as polyurethane, for the face frames, doors, and drawer fronts because they need to survive dings, splashed water, and airborne cooking grease. Brush finish onto newly sanded or stained face frames just thick enough to cover the surface; then check for drips and sags in an angled light. Apply three coats, sanding with 320 grit between coats.

## Tackle the big changes

To make room for the combination cooking peninsula and snack counter shown on *page 67*, we first removed the old countertop and separated the old peninsula from the adjoining cabinets.

Don't let the size of the new peninsula intimidate you. The side seen from the breakfast area goes together like a wide, flat-panel door [**Drawing 4**], with support brackets [**Photo N**] screwed to the stiles. We then screwed a framed end panel to the front panel. On the kitchen side of the peninsula, we left an opening to hold the new range [**Photo O**]. After finishing the peninsula and end panel to match the cabinet doors, we screwed them to both the floor and adjoining cabinet. We then topped the peninsula with plastic-laminate counters that are glued and clamped in place.

Another big change was to shroud the refrigerator from the nearby eating area.

A spacer to the right of the range provides clearance for the oven door. A laminate backsplash makes cleanup easy.

For the 53"-tall doors on this pantry, we divided the panels with center rails and added a third hinge for support.

Chamfered molding tops the bumped-out cabinets. Flexible quarter-round molding follows the soffit above the cabinets.

We cut away the shallow cabinets over the fridge and replaced them with extra-deep cabinets [**Photo E**] with long sides that would mirror the pantry cabinet.

We also extended the cabinets above the former wall-oven location and tied the old and new cabinets together with a shared face frame. Extra-tall doors turned it into a pantry [**Photo P**].

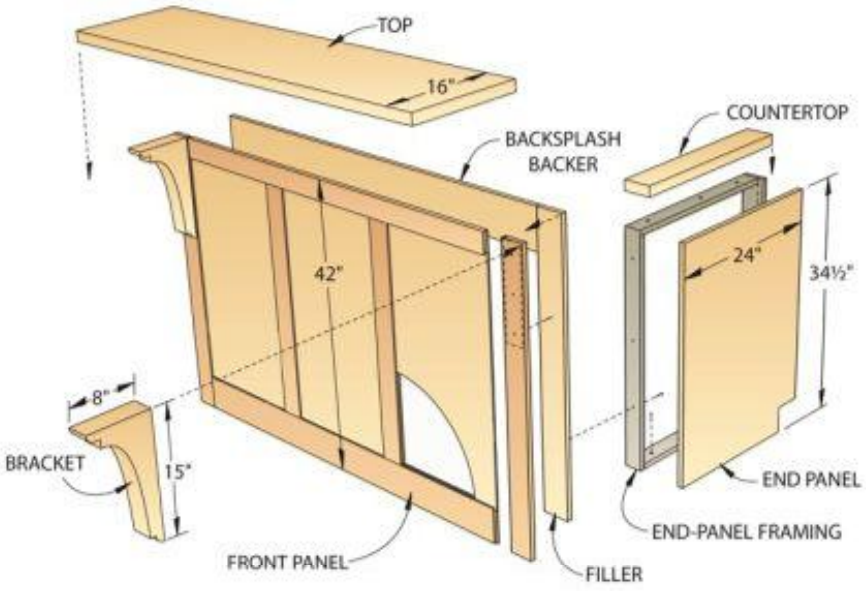
## Put it all together

Our cabinet crown molding plans hit a snag when the rigid molding wouldn't conform to waves in the soffit. Instead, we used quarter-round molding to follow the soffit, and a chamfered crown molding atop the two extra-deep cabinets [**Photo Q**]. For other ways to dress up your kitchen, see "Give your kitchen a woodworker's touch" *below*.

With the final details in place, you're ready to reinstall or replace the countertops and appliances. Then fire up the stove and prepare a meal of your favorite foods to celebrate your new kitchen.

Written by **Bob Wilson** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine**; **Lorna Johnson**

**4** KITCHEN PENINSULA




## Give your kitchen a woodworker's touch

**To keep your kitchen from looking like everyone else's, add woodworking accents. Faux feet and a strip along the bottom cabinet rail (*right*) give base cabinets the look of fine furniture. Turned table legs from mail-order sources such as Osborne (bun-feet.com) relieve the boxy look of kitchen island cabinets (*below*). If your tastes exceed your carving skills, buy corbels to attach as counter supports. Then rout flutes in extra-wide face-frame stiles (*below right*).**

## MORE RESOURCES

### FREE VIDEOS

- "Making Super-Simple Drawers" woodmagazine.com/simpledrawer.
- "Super-Simple Drawer Mounting" woodmagazine.com/drawermount.
- "Cutting Crown Molding" woodmagazine.com/crownmldg.
- "Gluing and Sanding Panels Flat" woodmagazine.com/panels.
- "Matching a Stain Color on Solid Wood and Plywood" woodmagazine.com/stainmatch.

### RELATED ARTICLES

- "Make Cabinets the Easy Way" Issue 191 (July 2009) or at woodmagazine.com/easycab. $
- "How to Apply Plastic Laminates" Issue 80 (August 1995) or at woodmagazine.com/laminate. $

($—Download this article for a small fee.)

## Sources

**Drawer slides:** 22" center-mount slide no. 02K40.22, $5.25 to $6.30 (depending upon quantity), Lee Valley Tools, 800-871-8158 or leevalley.com.
**Hinges:** 110°, edge-mount European-style hinge no. 00B07.03, $7.70 to $9.60 per pair, Lee Valley Tools.
**Knobs:** Westerly Suite 1¼x1⅛" satin-nickel finish round knob no. 02A16.51, $2.90 to $3.40, Lee Valley Tools.
**Stain:** Minwax Gunstock no. 231, $7.47 per quart from home centers.
**Clear finish:** Semigloss polyurethane, Old Masters, 800-747-3436 or oldmastrs.com ($13.70 from thepaintstore.com).

## COMING NEXT ISSUE

We stretched this kitchen's storage space by building in slide-out trays and organizers. For the details on making organizers to fit your own kitchen, see issue 198 (July 2010).

# Reliably Rugged Assembly Table

The torsion-box top on this rolling workstation provides space, glue-up and flexible-use features.

Overall dimensions:
47¾" wide x
47¾" deep x
30" high.

Build this project and you'll gain a dead-flat worksurface plus storage for glue-up supplies, clamps, and equipment such as a pancake air compressor and nailers. You can put the top to work immediately to glue up the rest of the table.

## Create a torsion-box top

1 Cut a 4×8' sheet of ¾" medium-density fiberboard (MDF) into equal halves to create a temporary assembly surface. Clamp the half-sheets together on a pair of sawhorses and check the flatness of the sheets in all directions with a straightedge [**Photo A**].

To correct unevenness, shim between the bottom sheet of MDF and the sawhorses. Then reclamp at the corners.

The edging (C) extends beyond one end of the bottom (A) a distance equal to the edging thickness. Spacers provide clamp clearance.

# Notch up another time-saving tablesaw jig

The torsion-box grid requires 20 precisely notched inside supports (B)—no problem for this jig.

From ½"-thick MDF, cut a 7/16×4" indexing pin and set it aside. From ¾" plywood or solid wood, cut a 2½×42" miter-gauge extension. Center and screw the extension to a miter gauge.

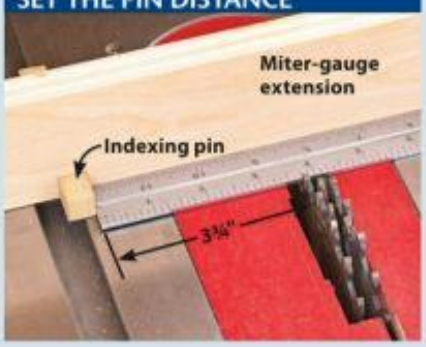
Install a dado set as wide as the thickness of the ½" MDF. Gradually raise the blade to ½" or until test joints assemble with their edges flush and no gaps. **Note**: *Notched joints should slip together with only light finger pressure to avoid cracking the MDF.*

Remove the extension from the miter gauge and glue the indexing pin in the notch with one end flush with the back face of the extension. Hold the extension against the miter gauge and position the indexing pin 3¾" from the blade (*below left*). Clamp the extension to your miter gauge while you screw it in position.

To use the jig, position the workpiece against the indexing pin and make your first notch (*below center*). Place that notch over the indexing pin and make a second notch. Repeat for the remaining notches (*below*).

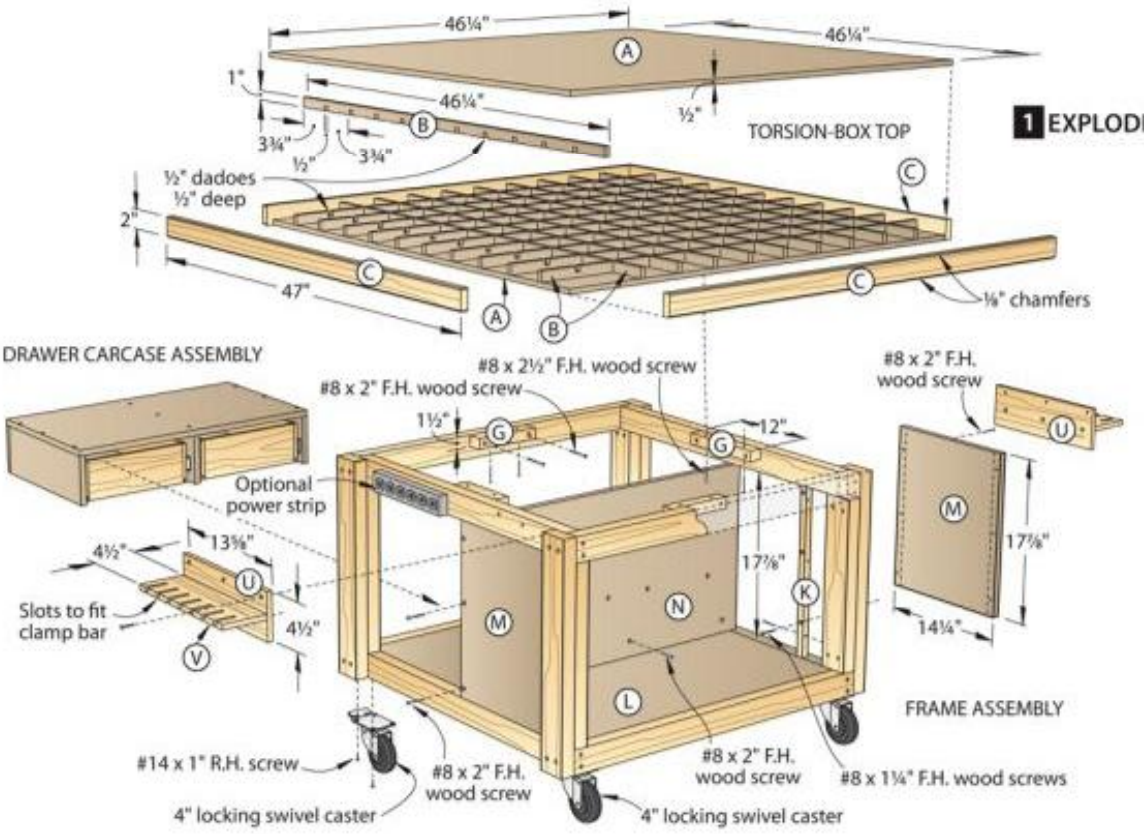
To avoid minor misalignments when assembling the grid, mark each end where you make your final notch. Later, assemble the grid with the marks together on both the horizontal and vertical groups of pieces.

**SET THE PIN DISTANCE**




**CUT THE FIRST NOTCH**

**CUT EVENLY SPACED NOTCHES**




**1** EXPLODED VIEW

**2** Cut the top/bottom (A) and inside supports (B) to size [**Materials List**, *page 73*]. Set the top aside, taking care not to mar the MDF edges or corners. Place the bottom on your temporary assembly surface.

**3** Make the jig shown in "Notch up another time-saving tablesaw jig" *above*. Then notch each support (B).

**4** Rip edging (C) ⅓₂" oversize in width. Glue and clamp one piece of edging to the bottom (A), with its lower edge and one end flush [**Drawing 1**, **Photo B**]. After that glue-up dries, glue and clamp a second piece of edging to the bottom, butting one end against the protruding face of the first edging piece. Set aside the other two edge pieces.

C
ASSEMBLE THE SUPPORT GRID

Align the inside supports (B) against the two installed pieces of edging (C). Then assemble the joints without glue.

D
TRACE THE GRID FOR GLUING

Hold the inside supports (B) grid in position by clamping it to the edging (C). You only need to trace alternating openings.

**5** Dry-assemble the grid of inside supports (B) [**Photo C**]. (Work carefully to avoid cracking the MDF.) With the assembled grid clamped against the edging (C), mark the grid pattern on the bottom [**Photo D**].

**6** Carefully remove the inside supports (B) as a grid. Apply glue to the bottom (A) where marked [**Photo E**] and replace the supports. Without gluing, lay the top (A) on the supports. Clamp around the edges and place heavy objects in the center until the glue dries. ***Quick Tip! Split up the glue-up.*** Don't be tempted to glue both edges of the inside supports at once to join the top and bottom. Even when you're not being too tidy, applying glue beads for 20 inside supports can exceed the working time of your glue.

**7** After the glue dries, remove the top (A). Apply glue to the top edges of the grid (B), and return the top with its edges flush with the edging (C). Clamp and weight the top in the center until the glue dries [**Photo F**].

**8** Glue and clamp the remaining edging (C). Sand the ends flush with the adjoining faces and the edges flush with the top and bottom (A). Chamfer the edges and sand to 180 grit.

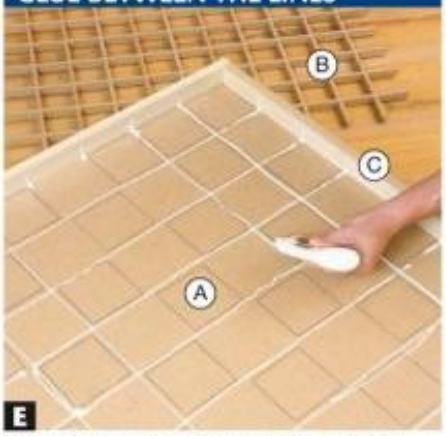
## Frame the table base

**1** Remove the temporary worksurface and save it for parts L–P and T. Place the torsion-box top (A–C) on the sawhorses and add shims to eliminate gaps and wobbles.

**2** Cut the long rails (D), short rails (E), middle cleat (F), and top-mounting cleats (G) to size. Cut eight leg (H) pieces to size from 1½" stock, but do not laminate the legs yet. ***Quick Tip! Use the best of the board.*** By cutting parts from oversize construction lumber—we used 10' 2×8s—you can cut around knots and defects. Cut long bottom cleats (I), short bottom cleats (J), and sidewall cleats (K) to size.

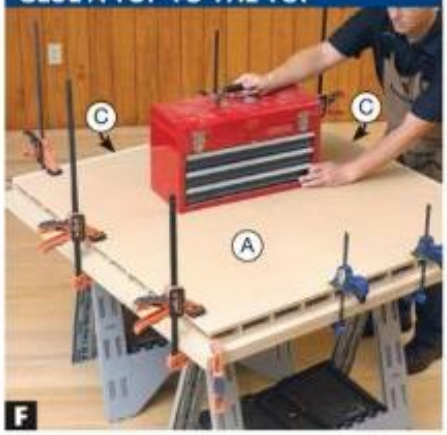
**3** Clamp a long rail (D) and short rail (E) together on the torsion-box top (A–C). Drill and screw the rails together [**Photo G**]. (For #8 screws, we drilled countersunk 7/64" pilot holes.) Repeat for the remaining corners to complete the top frame [**Drawing 2**]. Follow the same steps to assemble the lower frame; then attach the middle cleat (F) flush with the bottom of the lower frame.

**4** Drill, glue, and screw the long bottom cleats (I) to the short rails (E) [**Photo H**]. The upper face of the frame bottom (L) should rest flush with the top edge of the rails. Attach the short bottom cleats (J) flush with the middle cleat (F) and long bottom cleats.




E
GLUE BETWEEN THE LINES

Using the pencil marks as guides, quickly lay beads of glue from edge to edge on the bottom (A) and on the edging (C).

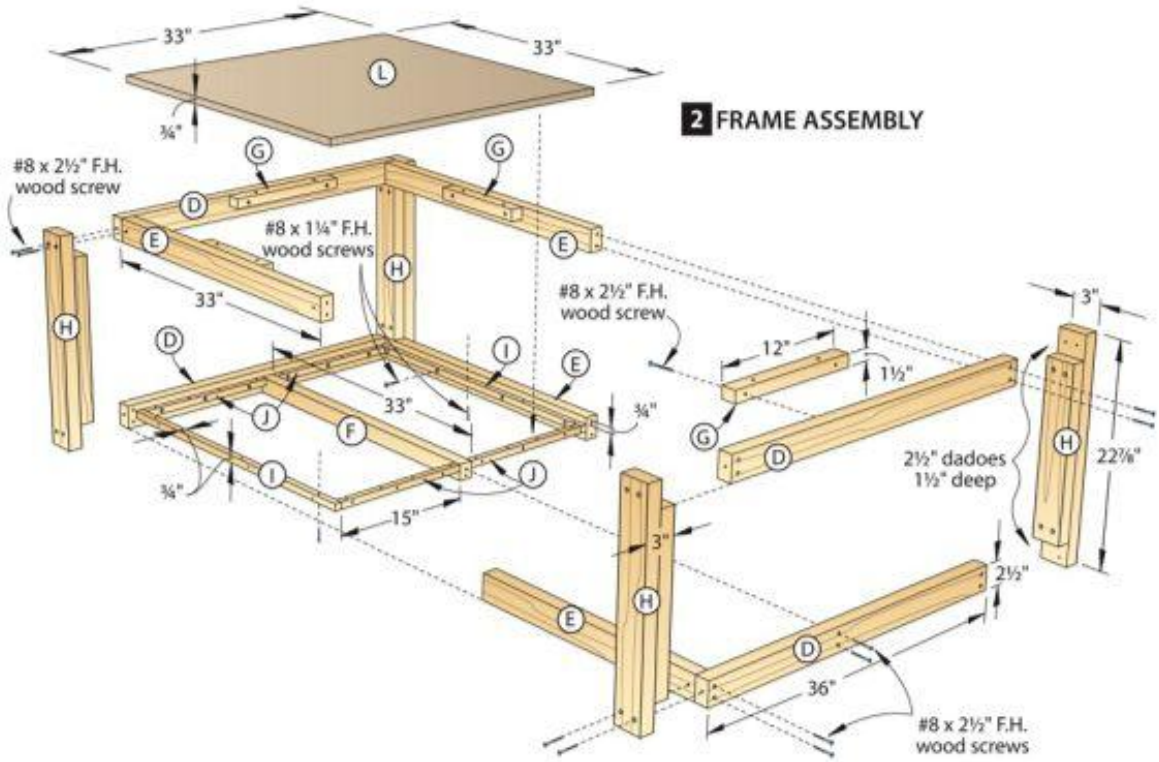



F
GLUE A TOP TO THE TOP

The edges (C) align the top and bottom (A). We weighted the center with a toolbox, but full paint cans and benchtop tools also work.

G
ASSEMBLE THE FRAME RAILS

Clamp the long and short rails (D, E) to the tabletop and check for square. Clamps hold the rails together while you drive 2½" screws.




**5** Cut the bottom (L) to fit the opening between the long and short rails (D, E). Glue and clamp the bottom to the middle cleat (F) and bottom cleats (I, J). After the glue dries, turn the bottom frame upside down. Then drill and drive screws through the cleats (F, I, J) to reinforce the glue joint.

**6** Cut 5" off four of the leg parts (H) to be laminated. Center, glue, and screw a shortened leg piece to a longer one, leaving 2½" notches at both ends [**Drawing 2**]. Repeat for the other legs.

**7** Clamp a leg (H) to the face of a short rail (E) on the upper frame (D/E) and check for square. Repeat for the remaining legs. Then clamp the lower frame to the legs. Screw the legs to the upper and lower frames [**Photo I**].

## Make a case for storage

**1** Double-check the height between the upper and lower frames (D/E) against the dimensions for the sidewalls (M) and back (N) [**Materials List**]. Then cut them to size.

**2** Glue and screw sidewall cleats (K) to the legs (H) so that the sidewalls (M) will sit flush with the outside faces of the short rails (E) [**Drawing 1**]. (You can check this with a piece of MDF scrap.)

**3** Glue, drill, and screw a sidewall (M) to a sidewall cleat (K) [**Photo J**]. Repeat for the other sidewall.

**4** Cut the back (N) to fit between the inside faces of the sidewalls (M) and short rails (E). Drill and screw the back to the sidewalls.

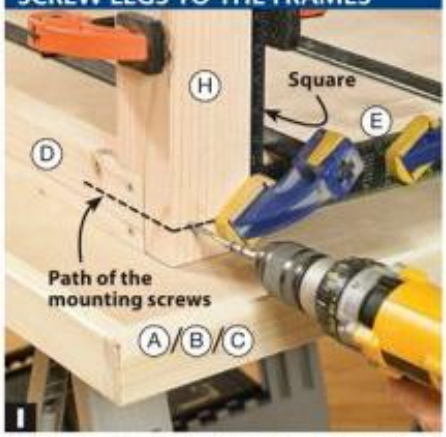
**5** Cut the drawer carcase top (O) and sides/divider (P) to size [**Drawing 3**]. Chamfer the front edges of the top. Then drill, glue, and screw the carcase sides and centered divider to the top.

**6** Place the drawer carcase (O/P) in position. Trace its edge profile on the bottom (L) and back (N) and remove it. Drill pilot holes in the bottom and back [**Photo K**]. Reinstall the drawer carcase. Drill countersunk pilot holes into its edges through the back and bottom holes and screw it in place.

**INSTALL CLEATS ON THE FRAME**

A scrap of ¾"-thick MDF gauges the setback needed for the long bottom cleat (I), which supports the bottom (L).

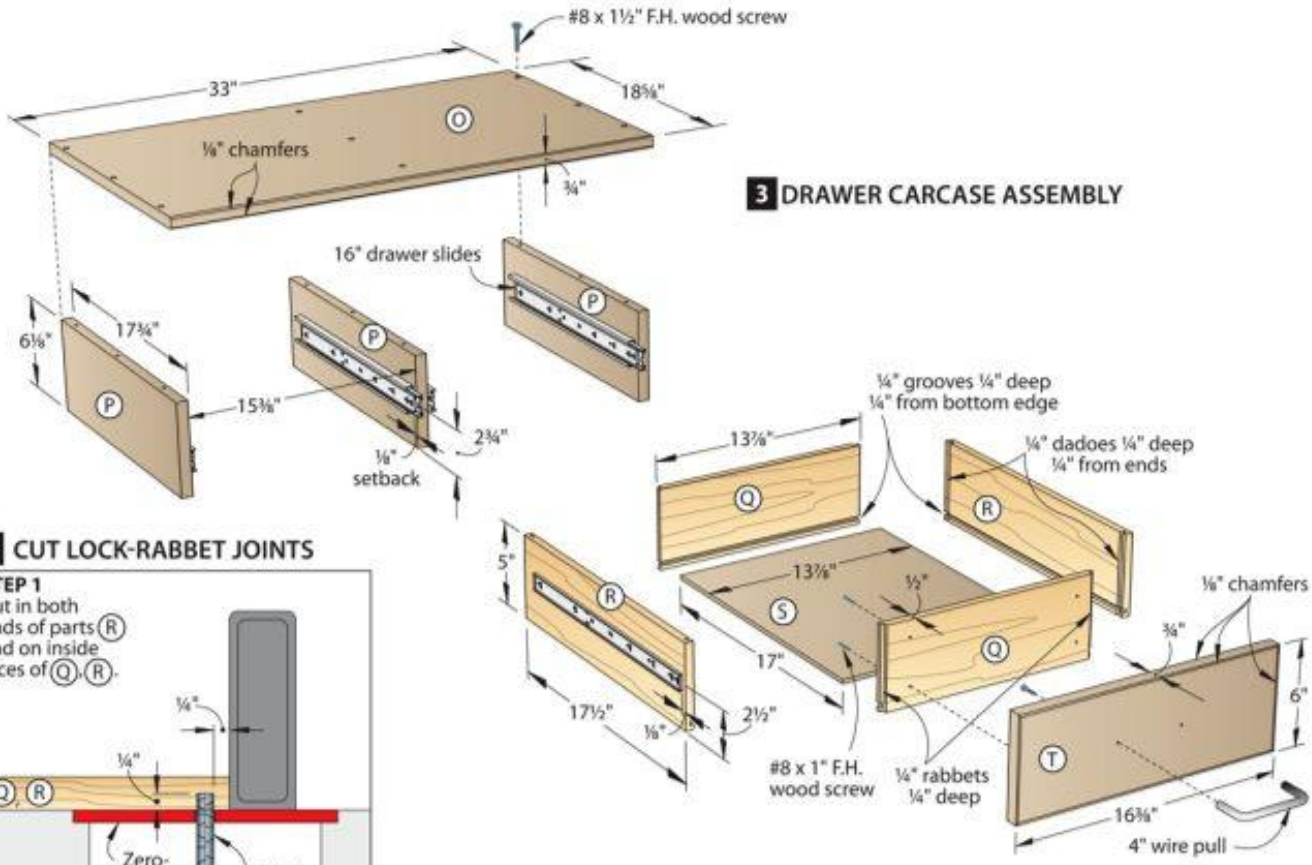
**SCREW LEGS TO THE FRAMES**




Clamp a square to the leg (H) and short rail (E) while driving screws between the two frame (D, E) screws.

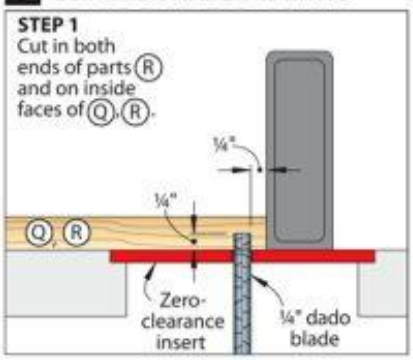
**FIT SIDES TO THE FRAME**

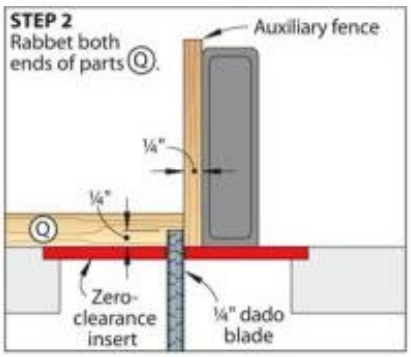
Test the height of the sidewalls (M) between the short rails (E) before gluing and screwing them in place against the sidewall cleat (K).




3 DRAWER CARCASE ASSEMBLY

3a CUT LOCK-RABBET JOINTS




## Now add two drawers

1 Cut the drawer fronts/backs (Q) and sides (R) to size [**Drawing 3**].

2 Install a ¼" dado blade and zero-clearance tablesaw insert and adjust the blade and fence as shown in Step 1 of **Drawing 3a**. Cut drawer-bottom (S) grooves in the drawer fronts/backs (Q) and drawer sides (R). Then dado both ends of each drawer side.

3 Attach a ¼"-thick auxiliary fence to your tablesaw rip fence with double-faced tape and rabbet the outside face on both ends of each front/back (Q), as shown in Step 2 of **Drawing 3a**.

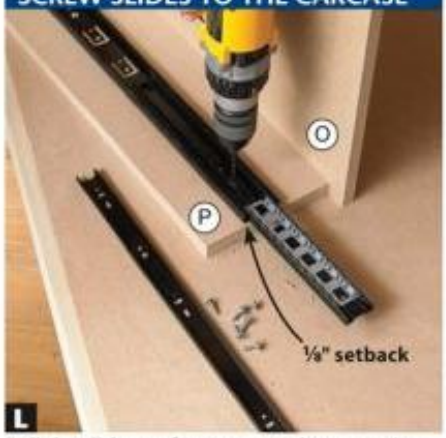
4 Dry-assemble a drawer front, back (Q), and sides (R) and measure for the drawer bottom (S). Then cut the drawer bottoms to size.

5 Sand the fronts/backs (Q), sides (R), and bottoms (S) to 220 grit. Then glue and clamp the drawers, checking for square [**Drawing 3**]. Finish-sand the assembled drawers.

**DRILL DRAWER CARCASE HOLES**

Use lines traced around the drawer carcase (O/P) to center pilot holes for attaching the carcase to the bottom (L) and back (N).

**SCREW SLIDES TO THE CARCASE**




Pull the slide out for access to the mounting holes. Center the slots on the drawer carcase (O/P) centerline.

**MOUNT SLIDES TO THE DRAWERS**

Drill pilot holes in the center of slide slots so the slides can move the drawers forward or backward within the drawer carcase (O/P).

**6** Divide the drawer-side width in half and add ¼". Then mark that distance up from the bottom edges of the drawer carcase sides/divider (P). At each mark, draw a line from end to end and a ⅛" setback from the front. Drill and screw carcase-mounted slide parts to the drawer carcase sides and divider [**Photo L**].

**7** Draw a centerline on the drawer sides (R) from front to back and a mark ⅛" from the drawer front (Q) edge. Drill and screw the drawer-mounted portions of the slides to the drawers [**Photo M**].

**8** Apply a glue bead between the lines traced earlier on the back (N) and bottom (L). Slide the drawer carcase into position, and screw in place. Then slide the drawers (Q–S) in place.

## Nearly ready to assemble

**1** Cut two drawer faces (T) to size and chamfer the edges [**Drawing 3**]. Drill holes and center-mount the drawer pulls. Countersink the mounting screws flush with the inside surface.

**2** Cut four 1/16"-thick spacers. Then apply double-faced tape to the drawer fronts (Q). Use the spacers to help center the faces against the drawer boxes (Q–S) [**Photo N**]. Screw the faces to the boxes. ***Quick Tip! Close the gap.*** If tape on the drawer-box front doesn't touch the drawer face, add spacers to push the box forward until it does. You can adjust the drawer glides forward after applying a finish and re-installing the hardware.

**3** Cut the clamp-rack backs (U) and holders (V) to size. Then bandsaw or dado notches to suit your clamps. Glue and clamp the holders to the backs. Drill and screw the racks to the bench.

**4** Remove all hardware and finish-sand the top and base to 180 grit. Wipe on three coats of satin polyurethane, sanding with 220 grit between coats. Reattach the hardware and an optional power strip. Then mount 4" swivel casters to the legs (H) and lower rails (D, E) [**Drawing 1**]. Finally, attach the top to the table using the top-mounting cleats (G). Now, if this table wobbles, shim the wheels because you know you've just built the flattest surface in your shop.

Written by **Bob Wilson** with **Jeff Mertz**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine**; **Lorna Johnson**

**N**
**TAPE FACES TO THE DRAWERS**
**Spacers provide clearance between the drawer face (T) and long rail (D). Double-check clearances along the sides and top.**

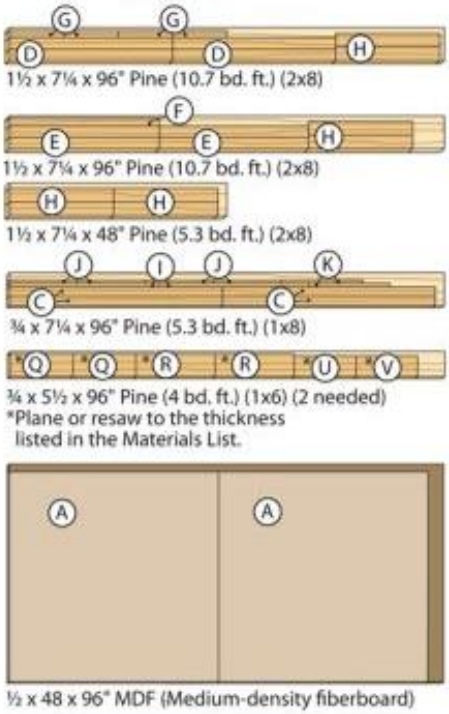
## Materials List

| Part | | FINISHED SIZE T | W | L | Matl. | Qty. |
|---|---|---|---|---|---|---|
| **Torsion-box top** | | | | | | |
| A | top/bottom | ½" | 46¼" | 46¼" | MDF | 2 |
| B | inside supports | ½" | 1" | 46¼" | MDF | 20 |
| C* | edging | ¾" | 2" | 47" | P | 4 |
| **Frame** | | | | | | |
| D | long rails | 1½" | 2½" | 36" | 2x | 4 |
| E | short rails | 1½" | 2½" | 33" | 2x | 4 |
| F | middle cleat | 1½" | 1¾" | 33" | 2x | 1 |
| G | top-mounting cleats | 1½" | 1½" | 12" | 2x | 4 |
| H** | legs | 3" | 3" | 22⅜" | LP | 4 |
| I | long bottom cleats | ¾" | ¾" | 33" | P | 2 |
| J | short bottom cleats | ¾" | ¾" | 15" | P | 4 |
| K | sidewall cleats | ¾" | ¾" | 17⅞" | P | 2 |
| L | bottom | ¾" | 33" | 33" | MDF | 1 |
| M | sidewalls | ¾" | 14¼" | 17⅞" | MDF | 2 |
| N | back | ¾" | 34½" | 17⅞" | MDF | 1 |
| **Drawer box, drawers** | | | | | | |
| O | drawer carcase top | ¾" | 18⅛" | 33" | MDF | 1 |
| P | drawer carcase sides/divider | ¾" | 6⅛" | 17¾" | MDF | 3 |
| Q | drawer fronts/backs | ½" | 5" | 13⅜" | P | 4 |
| R | drawer sides | ½" | 5" | 17½" | P | 4 |
| S | drawer bottoms | ¼" | 13⅜" | 17" | MDF | 2 |
| T | drawer faces | ¾" | 6" | 16⅜" | MDF | 2 |
| **Clamp racks** | | | | | | |
| U | back | ½" | 4½" | 13⅜" | P | 2 |
| V | holder | ½" | 4½" | 13⅜" | P | 2 |

*Parts initially cut oversize. See the instructions.
**Half of the lamination will be 5" shorter. See the instructions.

**Materials key:** MDF–medium-density fiberboard, P–poplar, 2x–dimensional pine or fir, LP–laminated pine.
**Supplies:** #8×1", #8×1¼", #8×1½", #8×2", #8×2½" flathead wood screws; #14×1" roundhead screws (16); 4" locking swivel casters (4); 16" drawer slides (2 sets); 4" wire pulls (2); optional power strip (1).
**Blade and bit:** Chamfer router bit, dado set.

## Cutting Diagram




## MORE RESOURCES

**FREE VIDEO**

- "Super-Simple Drawers" at woodmagazine.com/simpledrawer.

# CATALOGS FOR CRAFTSMEN

ADVERTISEMENT

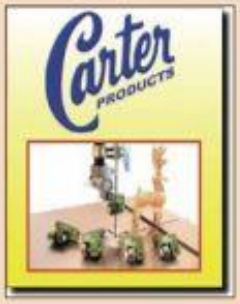
## Select the catalogs you

**1 AMERICAN FABRIC FILTER** – Increase the performance of your shop's dust collector with our economical and low-maintenance optimized dust bags.

**2 AMERICAN FURNITURE DESIGN** – The leader in woodworking plans for furniture! Over 85,000 copies of our Mission Bed have been sold! CAD generated designs, 36"X48" with instructions. Hardware, hand tools, router bits, finishes & books.

**3 APOLLO SPRAYERS** – HVLP spray finishing leaders for precision-engineered turbines, award-winning spray guns, Genuine Apollo® parts and accessories. FREE catalog or DVD.

**4 BEREA** – High Quality pen kits, wine bottle stopper kits and more. Huge selection.



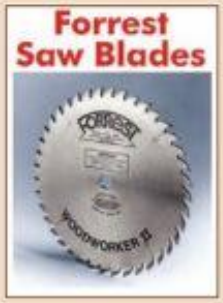

**5 CARTER PRODUCTS** – Carter AccuRight™ Bandsaw Blades, Carter Guides and Tires, Stabilizer™ Guides, Quick Release™, Electronic Tension Gauge™, Cobra Coil™ Tension Spring, Clean Sweep™ Bandsaw Brush, more.

**6 COOK'S SAW MANUFACTURING** – Cook's Saw is a leading manufacturer of Portable Sawmills, Board Edgers, Blade Sharpeners, Tooth Setters, Bandsaw Blades, and Sawmill Parts. FREE Catalog.

**7 DETAILED PLAY SYSTEMS** – Features wooden swing sets and backyard playground equipment kids, plans, and accessories to build children's outdoor play structures. Free catalog.

**8 EAGLE AMERICA** – The World's Router Bit Source! Over 2,000 bits from Eagle America and PriceCutter, plus 3,600 other woodworking items—all online.

**9 EPILOG** – Add value to woodworking projects with laser engraving systems from Epilog. Customize anything with a touch of a button.




**10 FORREST MANUFACTURING** – The finest, quietest saw blades and dados! Full line of sizes available.

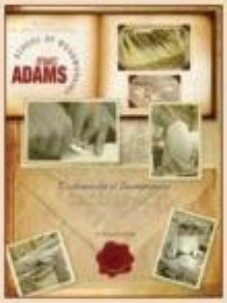
**11 HUT PRODUCTS** – "Turn to Quality". A comprehensive catalog for Wood Turners from HUT Products.

**12 JDS COMPANY** – Providing quality products for over 20 years! Find out more information on JDS Air Filtration, dust collection systems and the amazing Multi-Router!

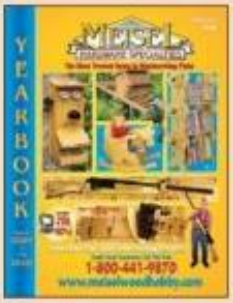
**13 KLOCKIT** – Whether your next project is to build a beautiful clock or repair a treasured heirloom, Klockit can supply all you need; Plans, Wood Kits and Clock Components.

**14 LAGUNA TOOLS** – With over 25 years of experience, and since we are always looking for ways to build a better bandsaw, our equipment continues to set the standard for precision, durability and value.

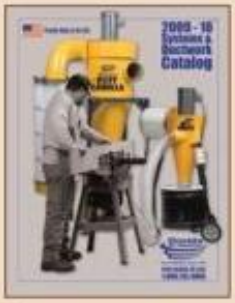
**15 LIGNOMAT** – Catalog describes full line of wood moisture meters. Convenient, reliable and affordable moisture meters for any hobbyist and woodworker.




**16 MARC ADAMS SCHOOL OF WOODWORKING** – Committed to fine woodworking excellence through hands-on learning experiences with the best woodworkers of modern time.




**17 MEISEL HARDWARE SPECIALTIES** – Over 2,000 woodworking project plans for indoor and outdoor furniture, toys, clocks, patriotic, birdhouses, Christmas, etc. Request our full-color catalog.




**18 ONEIDA AIR SYSTEMS, INC.** – Offers the finest quality dust collection systems and a complete line of ductwork and accessories. Free catalog.

**19 OSBORNE WOOD PRODUCTS** – 40 full-color catalog pages containing the latest fresh and innovative product releases, our brand new corbels, bun feet, island legs, and molding.

**20 PACKARD WOODWORKS** – Catalog for Woodturners! All major brands of Turning Tools, Chucks, Penmaking Supplies, Finishing Supplies, Books, Videos and much more. Just for Turners.

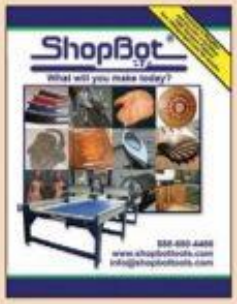
ADVERTISEMENT

# want from these 31 FREE LISTINGS! See the attached card for ordering info.

**21 PEACHTREE WOODWORKING SUPPLY INC.** – Supplying you with over 5,000 items to choose from, Peachtree Woodworking is your "One Stop Supply Shop" for all of your woodworking needs.

**22 ROCKLER WOODWORKING AND HARDWARE** – Your best source for thousands of quality, innovative products for the woodshop. FREE catalog.

**23 SAWSTOP PROFESSIONAL CABINET SAW** – SawStop provides high quality table saws with an exclusive built-in safety technology which stops instantly on contact with skin.



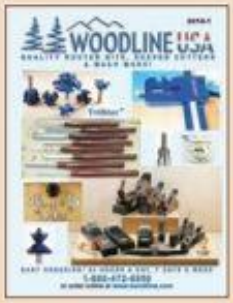

**24 SHOPBOT** – ShopBot's affordable, high-performance CNC routers are designed for 2D and 3D machining applications in wood, plastics, foam and non-ferrous metals.

**25 SOMMERFELD'S TOOLS** – For the best Router Bits, Blades and Tools get Marc Sommerfeld's FREE woodworking catalog today and build projects like a pro!

**26 STEVE WALL LUMBER CO.** – Supplier of hardwoods, exotics, plywood, custom panel doors, turning squares, hardwood flooring, Oliver Machinery, and Festool products. Catalog.

**27 TOOLMART** – Your best online brand name Power tools and Accessories store. Our aim is to provide the finest and best quality tools and accessories at the lowest price.

**28 WOODCRAFT** – Over 8,000 woodworking hand & power tools, finishing supplies, hardware, exotic woods and more! Top quality tools from around the world, exclusives & hard-to-find jigs and accessories.




**29 WOODLINE USA** – Woodline USA provides quality tools including carbide router bits and shaper cutters, planes, lathe tools, clamps and other innovative accessories.

**30 WOODMASTER** – 4-Way Money-Maker planes, molds, sands, saws… creates high-profit moldings, picture frames, tongue & groove. 12", 18", & 25" models.

**31 WOODWORKER'S HARDWARE** – Our 544-page catalog features the largest selection of cabinet hardware in this industry, with over 10,000 items in stock.

## CATALOGS FOR CRAFTSMEN
## Order Form

**Fill out the coupon below, circle the numbers corresponding to the catalogs you'd like to receive, and mail to: WOOD® Magazine • Catalogs for Craftsmen • Dept. WOCCMA10 • P.O. Box 5135 • Buffalo, NY 14205-5135.**

**This coupon expires July 14, 2010.**
**Allow 4–6 weeks for delivery. Expired cards will not be processed.**

**CIRCLE THE NUMBERS BELOW CORRESPONDING TO ITEMS IN THIS ISSUE.** Dept. WOCCMA10

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 9 | 13 | 17 | 21 | 25 | 29 |
| 2 | 6 | 10 | 14 | 18 | 22 | 26 | 30 |
| 3 | 7 | 11 | 15 | 19 | 23 | 27 | 31 |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 4000 |

**Discover how rewarding woodworking can be! Get one full year of WOOD® for just $28.00 (7 issues). Simply circle No. 4000. You will be billed later.**

**NAME** _____

**ADDRESS** _____

**CITY** _____

**STATE** _____ **ZIP** _____

**E-MAIL ADDRESS** _____

**PHONE (OPTIONAL)** _____

# Ask WOOD

Answers to your questions from letters, e-mails, and WOOD Online®

## HAVE A QUESTION?

For an answer to your woodworking question, write to **ASK WOOD, 1716 Locust St., LS-221, Des Moines, IA 50309-3023** or e-mail us at **askwood@woodmagazine.com**. For immediate feedback from your fellow woodworkers, post your questions on one of our woodworking forums at **woodmagazine.com/forums**.

## A plan for building from plans

**Q: I really want to build the toy excavator from issue 194 (Nov. 2009), but I'm intimidated by all the steps. Can you give me some tips to get over this fear and get started?**

*—Al Prevedel, Memphis, Tenn.*

**A:** Lie back, Al, the doctor is in. The first step to overcoming your fears is to confront them head-on. Read through every step of the instructions. Many plans like the excavator also come with full-size patterns in the *WOOD Patterns®* insert. Familiarize yourself with them as well. Pay attention to the tools mentioned. Some projects require a full complement of woodworking tools and the skills to use them safely. But we also include in every issue a "Basic Built" project that needs only a minimum of tools.

Next flip to the back of the plan. *WOOD®* magazine project plans include a complete materials list along with any specialty blades and bits you'll need. Hardware is listed along with sources. Gather all of your materials before you start: You don't want to find out near the end of construction that you have to alter the plan because your hardware doesn't match ours.

Then, take a second look at the illustrations. Each project plan will contain one illustration that features a complete exploded view of the project. It can sometimes look intimidating, but additional illustrations provide detailed understanding.

At last, it's time to dive in. Don't be intimidated by all those steps you see. In reality, more steps usually means more simplicity as our designers and editors break down the construction process into easy sub-assemblies.

If you're still stuck, feel free to email us at woodmail@woodmagazine.com or pose your question in the forums at woodmagazine.com.

## Rout 'round the bend with a starter pin

**Q: I want to build arched-top paneled doors. How do I cut a dado on the concave side of the curved top rail to accept the panel?**

*—Dick Rosenboom, Gainesville, Fla.*

**A:** Pick up a slot-cutting bit for your table-mounted router, Dick. Slot cutters usually come in three parts—the arbor, a slot cutter, and a guide bearing—so that you can customize one to fit your cut. Choose a cutter to match your panel's edge thickness and a guide bearing that properly limits the depth of the cut.

To use the bit, remove the fence from your table, and set the bit height so that it is centered on the rail. Install a starter pin for leverage so you can ease the workpiece into the bit to start the cut, as shown. Then, simply guide the workpiece against the bit's bearing.

Feed the workpiece against the rotation of the bit.

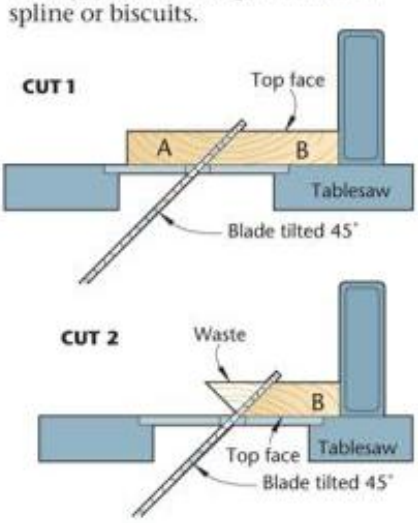
## The splashy waterfall joint

**Q: A *WOOD* Online forum member suggested a "waterfall joint" for the table legs I'm building. But I can't find reference to the joint anywhere. Could you explain?**

*—Lester Das, Cortland, N.Y.*

**A:** The eye-catching look of the waterfall joint has more to do with the grain pattern and careful matching than it does the joinery, Lester. It gets its name from the matched grain that cascades down the corner of the joint like running water. The joinery boils down to a long miter joint cut on the tablesaw.

But the trick is in the grain selection. For this joint, choose a board with a bold, arched, cathedral grain pattern. With your tablesaw blade beveled at 45°, and the workpiece face up, make the first cut down the middle of the grain pattern, as shown *below*. Then flip the board so the workpiece faces down, and make the second cut, discarding the center waste piece. This leaves a satisfyingly symmetrical grain wrap when assembled. Finally, join the two pieces with a spline or biscuits.



*continued on page 78*




From Hobbyist to Industrial

Oneida Air Systems is #1 in Dust Collection.

- Top Award Winner in All Independent Tests Since 1993.

Some of Our Industry Awards:

New! FREE Upgrade to GE Certified HEPA Media Filter with System Purchase!
Most Systems For Limited Time Only!

Made in the USA.

- Built to Last A Lifetime.
- FREE Design Consultation
- Cyclonic Retrofits for Your Existing System.
- 1.5hp and Larger Systems
- One Stop Shopping for All of Your Dust Collection Needs.

The Dust Deputy
A Cyclone for Shop Vacuums.
D.I.Y. Dust Deputy Starts at $59.00
Deluxe Kit Shown Here $99.00

Shop Vacuum Not Included

Oneida Air Systems

Makes A Great Gift!

Dust Collection Since 1993.

Call Today for FREE Catalog!
1.800.732.4065

Order Online!
See Our Complete Product Line & Videos
www.oneida-air.com

TURNS ANY WET-DRY VAC INTO A SUPERHERO.

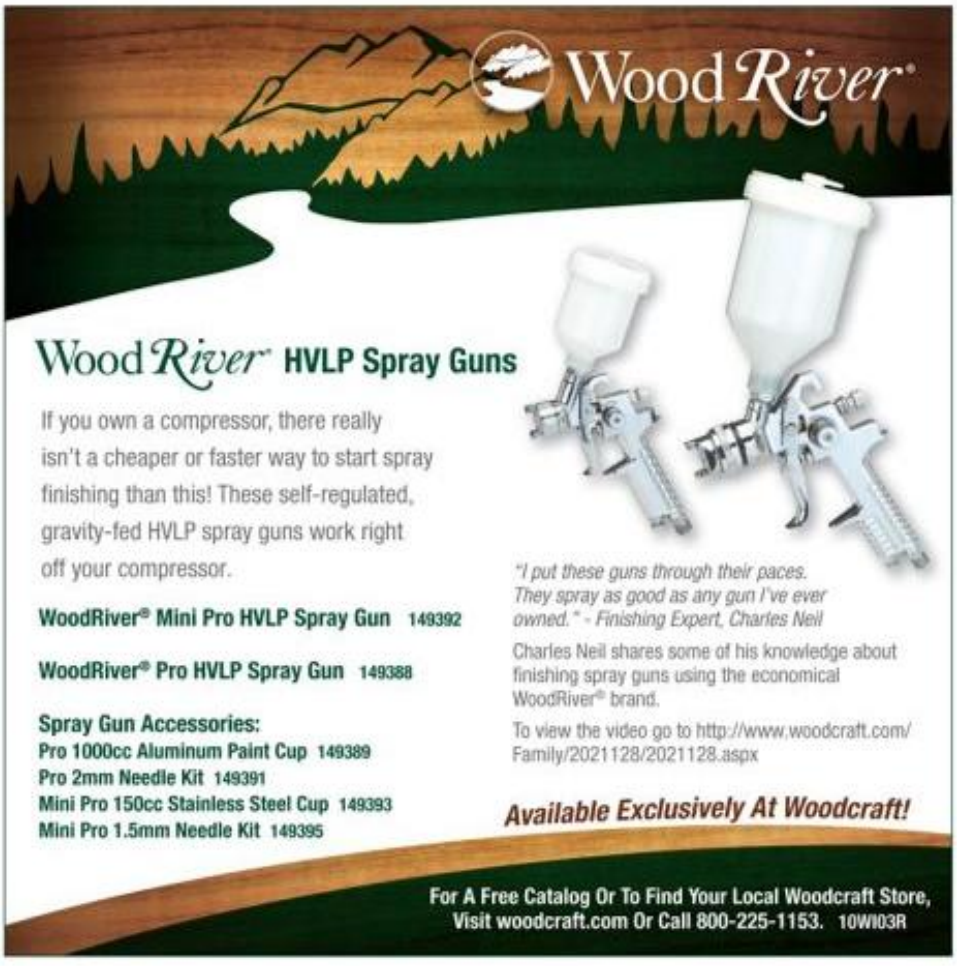
*CleanStream® Pro Filters* transform mild-mannered work vacs into super-powerful dust-fighters. With true HEPA filtration of 99.97% of even the finest particles, you'll get super cleanups without dust clouds. Sawdust, drywall dust, water – none of them stand a chance against the dynamic duo – your wet-dry vac and a Cleanstream Filter.

Available at Sears Lowe's cleanstream.com

CleanStream Wet/Dry Vac Filter

Cleanstream and GORE are registered trademarks of W.L. Gore & Associates, Inc. © 2009 W.L. Gore & Associates, Inc.

*Dust has met its match.*


Wood River®
Wood River® HVLP Spray Guns
If you own a compressor, there really isn't a cheaper or faster way to start spray finishing than this! These self-regulated, gravity-fed HVLP spray guns work right off your compressor.
WoodRiver® Mini Pro HVLP Spray Gun 149392
WoodRiver® Pro HVLP Spray Gun 149388
Spray Gun Accessories:
Pro 1000cc Aluminum Paint Cup 149389
Pro 2mm Needle Kit 149391
Mini Pro 150cc Stainless Steel Cup 149393
Mini Pro 1.5mm Needle Kit 149395
"I put these guns through their paces. They spray as good as any gun I've ever owned." - Finishing Expert, Charles Neil
Charles Neil shares some of his knowledge about finishing spray guns using the economical WoodRiver® brand.
To view the video go to http://www.woodcraft.com/Family/2021128/2021128.aspx
Available Exclusively At Woodcraft!
For A Free Catalog Or To Find Your Local Woodcraft Store, Visit woodcraft.com Or Call 800-225-1153. 10WI03R

# Ask WOOD

## Casting color mismatches in a whole new light

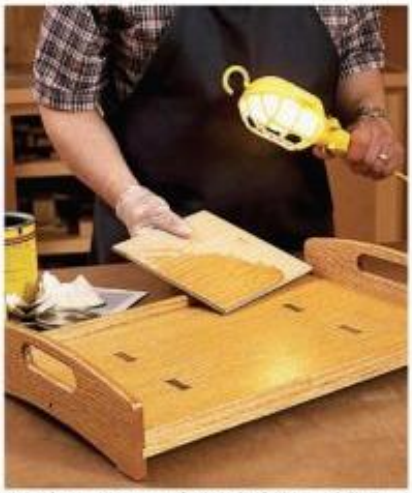
**Q: When I built my wife a jewelry box I was careful to dye and stain the wood to match a drawer from our dresser. But when I set the box on the dresser, the color was way off. What went wrong in my finishing process between the shop and the bedroom?**

*—Nathan Puckett, Baldwin Park, Calif.*

**A:** The answer more likely resides on your ceiling than on your finishing table, Nathan. If your shop is like most, you have fluorescent lights overhead. But your project will reside in a bedroom where it sits under incandescent lights or sunlight or a combination of both. The different types of lights have color makeups that will skew the look of your finish.

For instance, fluorescent lights lack red, but emphasize green and blue, so projects created in your shop could seem redder in your house. Incandescents, on the other hand, emphasize red and yellow, minimizing blue and green.

For best results, match colors under a light source similar to the environment where the project will live. If you have to, bring incandescent lamps into your shop to simulate your home's lights. Or make color samples to test in the same room as your dresser. Another option: Replace the low-price cool white tubes in your shop lights with warm white tubes that produce a broader spectrum of light.



**Supplement your shop's lighting with the same type of light your project will be displayed under.**

A string or a chalkline makes a ready reference for checking the straightness of a sheet of plywood.

## Straight and square is as easy as 3-4-5

**Q: To make shop cabinets, I'm cutting a lot of plywood. Is it safe to consider the factory edges of plywood to be straight and square, or will I need to true them up?**

*—Jonathan Walters, Bryantsville, Ky.*

**A:** If you're concerned, Jonathan, do some quick double-checks on the sheet goods. Sight along the edge to see any curves or wobbles from the manufacturing process. This will also reveal dinged edges or delaminating areas that might not be visible straight-on. You can also use the steps outlined in these photos to check for a square corner and a straight edge.

If you do find problems, your best straightener is your tablesaw. Cut your project pieces to ⅛" or more oversize with the factory edge against the tablesaw fence. Then cut them to final size with the newly ripped edge against the fence. Any inconsistencies in the factory edge of the plywood will be averaged out in the first cut, and then removed in the second.

If the diagonal measures 5' at the 3' mark of a 4' wide sheet of plywood, then the corner is square. Just remember: Not all plywood is exactly 4' wide.

*continued on page 80*

✓Yes

✓Yes

✓Yes

✓Yes

✓Yes

✗No

✓Yes

✓Yes

✓ Everyday Low Prices
✓ Easy To Use Website
✓ Huge Selection
✓ Fast Shipping

ROCKAUTO.COM
ALL THE PARTS YOUR CAR WILL EVER NEED

GO TO WWW.ROCKAUTO.COM ROCKAUTO, LLC (EST. 1999) BBB RATING A+

WOODLINE USA
QUALITY CARBIDE ROUTER BITS, SHAPER CUTTERS & MUCH MORE!

NEW from Woodline USA!

We now carry a complete line of quality woodturning tools and hand planes.

Many new molding bits in stock

Indexable Knife Sets

TriStar™
Smooth 3 Wing Router Bits

Gift Certificates available

Our instructional DVDs will help you with your tools and projects.

NEW DadoMax™ for perfect fitting dados

EASY ORDERING! 24 HOURS A DAY, 7 DAYS A WEEK
1-800-472-6950
request a full catalog or order online at www.woodline.com

# Ask WOOD

## Wood like a rock

**Q: I recently made some toy blocks out of an old gnarled Osage orange fence post. It sure made my planer work, but it got me to wondering: What is the world's hardest wood?**

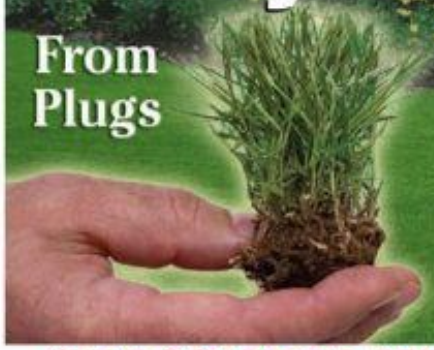
*—Ronald Martin, Worthington, Ohio*

**A:** Interesting question, Ronald. The hardness of wood is measured using the Janka Hardness Test. This test measures the force required to push a steel ball with a diameter of 0.444" into the wood to a depth of half the ball's diameter. Generally acknowledged as the hardest wood, lignum vitae (*Guaiacum sanctum* and *Guaiacum officinale*) measures in at 4,500 pounds-force (lbf) on the Janka scale. That's more than twice as hard as Osage orange (one of the hardest domestic woods) at 2,040 lbf and more than three times harder than red oak at 1,290 lbf.

Lignum vitae, found in Central and South America, has long been used in applications requiring extreme durability and density, such as ships' tackle, carvers mallets, and hand plane soles. Naturally infused with a wax-like resin, lignum vitae polishes to a high sheen, making it a prized wood for turners. And because it is self-lubricating and water-resistant, it was, until recently, the preferred substance for shaft bearings for silent-running submarines. In fact, the highest grades of the wood are still sometimes referred to as "bearing" grade.

**With tight, interlocking growth rings, slow-growing lignum vitae is so dense that it quickly sinks in water.**

# SAVE When You Grow A Zoysia Lawn From Plugs!



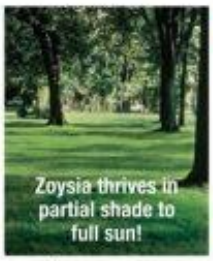

To A Fabulous Lawn

ZOYSIA FARM NURSERIES
Improving America's Lawns Since 1953

## GRASS SEED WILL *NEVER* GROW A LAWN LIKE THIS!

### *Save Water! Save Time! Save Work! Save Money!*

### Grass Seed Is For The Birds!




Stop wasting money, time and work sowing new grass seed each spring, only to see birds eat the seed – or rain wash it away – before it can root. Plant a genuine Amazoy™ Zoysia lawn from our living Plugs only once... and never plant a new lawn again!

### Zoysia Grows Where Other Grass Doesn't!

Zoysia is the perfect choice for hard-to-cover spots, areas that are play-worn or have partial shade, and for stopping erosion on slopes. North, South, East, West – Zoysia will grow in *any* soil, no ifs, ands or buts!

**Each Zoysia Plug You Plant In Your Soil Is GUARANTEED TO GROW Within 45 Days Or We'll Replace It FREE!**

To ensure best results, we ship you living sheets of genuine Amazoy™ Zoysia Grass, harvested direct from our farms. Plugs are not cut all the way through. Before planting, simply finish the separation by cutting 1"-sq. Plugs with shears or knife. Then follow the included easy instructions to plant Plugs into small plug holes about a foot apart. Our guarantee and planting method are your assurance of lawn success backed by more than 5 decades of specialized lawn experience.

©2010 Zoysia Farm Nurseries, 3617 Old Taneytown Rd, Taneytown, MD 21787

### Eliminates Endless Weeds And Weeding!

No more pulling out weeds by hand or weeds sprouting up all over your lawn. Zoysia Plugs spread into a dense, plush, deep-rooted, established lawn that drives out unwanted growth and stops crabgrass and summer weeds from germinating.

### Environmentally Friendly, No Chemicals Needed!

No weeding means no chemicals. You'll never have to spray poisonous pesticides and weed killers again! Zoysia lawns are safer for the environment, as well as for family and pets!

### Cuts Watering & Mowing By As Much As 2/3!

Many established Zoysia lawns only need to be mowed once or twice a season. Watering is rarely, if ever, needed – even in summer!

Meyer Zoysia Grass was perfected by the U.S. Gov't, released in cooperation with the U.S. Golf Association as a superior grass.

**www.ZoysiaFarms.com/mag**

### Stays Green In Summer Through Heat & Drought!

When ordinary lawns brown up in summer heat and drought, your Zoysia lawn stays green and beautiful. The hotter it gets, the better it grows. *Zoysia thrives in blistering heat (120°)*, yet it won't winter-kill to 30° below zero. It only goes off its green color after killing frosts, but color returns with consistent spring warmth. Zoysia is the perfect choice for water restrictions and drought areas!

### Our Customers Love Their Zoysia Lawns!

One of our typical customers, Mrs. M.R. Mitter of PA, wrote how "I've never watered it, only when I put the Plugs in... Last summer we had it mowed 2 times... When everybody's lawns here are brown from drought, ours just stays as green as ever!"

### Order Now And Save!

The more Amazoy™ Zoysia Plugs you order, the more you SAVE! And remember, once your Zoysia lawn is established, you'll have an endless supply of new Plugs for planting wherever you need them. Order now!

**FREE! PLANTING TOOL** With Order of 400 Plugs or More!

Saves time, work and effort when making holes for Plugs!

## *Order Your ZOYSIA Plugs Now — Harvested Daily From Our Farms And Shipped To You Direct!*

## ZOYSIA GRASS SUPER SALE — SAVE OVER 50%! Get Up To 900 Plugs — FREE!

Please send me guaranteed Amazoy as checked:

| PACK | # PLUGS | # Free Plugs | Free Bonus | *Retail Value* | Your PRICE | + Shipping | SAVINGS |
|---|---|---|---|---|---|---|---|
| ❑ Basic | 100 | – | – | *$ 8.95* | $ 8.95 | $ 2.50 | – |
| ❑ 2 Basic Packs + 1 FREE | 200 | 100 | – | *$ 26.85* | $17.90 | $ 5.00 | 30% |
| ❑ 4 Basic Packs + 2 FREE | 400 | 200 | Free Step-on Plugger | *$ 62.65* | $35.80 | $ 7.50 | 40% |
| ❑ 5 Basic Packs + 3 FREE | 500 | 300 | Free Step-on Plugger | *$ 80.55* | $44.75 | $10.00 | 42% |
| ❑ 6 Basic Packs + 4 FREE | 600 | 400 | Free Step-on Plugger | *$ 98.45* | $53.70 | $12.50 | 44% |
| ❑ 9 Basic Packs + 7 FREE | 900 | 700 | Free Amazoy Power Auger | *$168.15* | $80.55 | $15.00 | 50% |
| ❑ 10 Basic Packs + 9 FREE | 1000 | 900 | Free Amazoy Power Auger | *$195.00* | $89.50 | $17.50 | 54% |

❑ Extra Step-on Plugger $8.95 ❑ Extra Amazoy Power Auger™ for 3/8" Drill $24.95

Mail to: ZOYSIA FARM NURSERIES
3617 Old Taneytown Road, Taneytown, MD 21787
Dept. 5436

Write price of order here $_____
Md. residents add 6% tax $_____
Shipping $_____
ENCLOSED TOTAL $_____

Payment method (check one)
❑ Check ❑ MO
❑ MasterCard
❑ Visa

Card # _____ Exp. Date _____
Name _____
Address _____
City _____ State _____
Zip _____ Phone _____

We ship all orders the same day plugs are packed at earliest correct planting time in your area.

Amazoy is the trademark registered U.S. Patent Office for our Meyer Zoysia grass.

**Order Now! www.ZoysiaFarms.com/mag**

Not shipped outside the USA or into WA or OR

# Shop-Proven Products

These woodworking wares passed our shop trials

## About our product tests

We test hundreds of tools and accessories, but only those that earn at least three stars for performance make the final cut and appear in this section. Prices are current at the time of article production and do not include shipping, where applicable.

## Make perfect box joints on your router table

I can't imagine an easier way of cutting box joints than with Rockler's Router Table Box Joint Jig. It's almost fool-proof: Within 15 minutes of opening the box I had made four perfect-fitting joints. Here's how it works. The melamine-coated MDF base mounts in the miter slot of any router table. You install a ¼", ⅜", or ½" upcut or downcut spiral bit in the router and a matching indexing guide on the base. Use a setup bar (set available at Rockler, #36918, $18) equal to the bit diameter to set the spacing between the bit and indexing guide. Holding your workpiece against the sled's fence, slide it over the bit to cut a notch. Slip that notch onto the indexing guide and rout another one. Repeat across the board's width.

The only joints I routed that didn't fit perfectly resulted from off-brand bits that did not measure exactly the same as the indexing guides, which proved dead-on. (Bits are not included with this kit.)

*—Tested by Bob Hunter, Tools & Techniques Editor*

**Router Table Box-Joint Jig, # 29502**

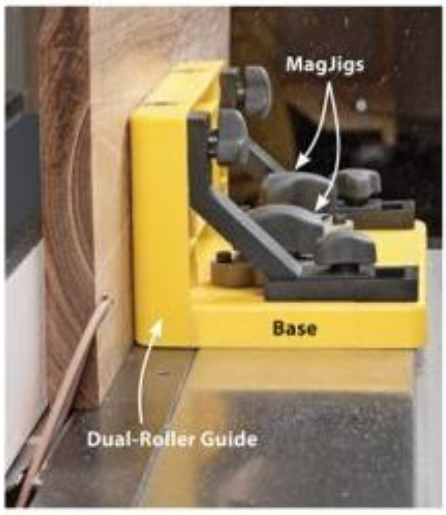
| | |
|---|---|
| Performance | ★★★★★ |
| Price | $80 |

Rockler
800-279-4441; rockler.com

## Versatile magnetic jig provides a helping hand—or two

The Magswitch MagFence Combo Kit works as an auxiliary fence or hold-in on any steel or cast-iron surface. This kit comes with a base, two turn-on-and-off magnetic MagJigs, a Dual-Roller Guide for holding stock flat against a fence or tabletop, and a MagFence Resaw Guide for resawing on a bandsaw. The MagJigs fit into two holes on the base, and when you turn their knobs a quarter-turn they lock onto the surface with incredible strength.

I used the MagFence kit in every application where I might need a helping hand: to hold stock against the fences on my tablesaw, jointer, and shaper; to hold down boards while face-jointing on my jointer; and to hold workpieces squarely on my drill press. Never a problem. I even used two of the Resaw Guides, with their 7½° tapered faces on each side of the blade, to sandwich my board while resawing on my bandsaw, and still had 15° of steering room to counter blade drift. And for those times when the MagFence might not work, I can take the MagJigs out and use them in other shopmade jigs, such a dust-hose holder on my oscillating spindle sander.



*—Tested by Randy Zimmerman, a cabinet- and furnituremaker for 15 years*

**MagFence Combo Kit**

| | |
|---|---|
| Performance | ★★★★★ |
| Price | $150 |

Magswitch
303-468-0662; magswitch.com.au

### Rout with Wizard-like precision using this jig

A lot of aftermarket router jigs seem gimmicky to me, but the Router Wizard Pro has become my go-to choice for any routing that calls for ultra-precision—especially joinery where there's no room for error—or requires a straightedge for reference. With this multipurpose jig and my plunge router I can rout dadoes, grooves, rabbets, mortises, and circles with reliable repeatability on almost any size workpiece.

After mounting your plunge router onto the heavy-duty plastic plate, you install the plate into the aluminum base. Now you can use the rack-and-pinion adjusters to dial in the bit location with unbelievable precision. Adjustable stops and a reference pin on the plate set slot limits for mortises and stopped dadoes or grooves. There's also a guide mounted below one edge to reference on workpiece edges for routing parallel slots or grooves. Remove this to register against a straightedge guide for field routing; it also fits into the existing slots on some straightedge guides. I used the included radius attachment for routing dead-on circles up to 4' in diameter.

*—Tested by Steve Feeney, a woodworker with 25 years experience and a WOOD magazine tool tester for 5 years*

**Router Wizard Pro**

| | |
|---|---|
| Performance | ★★★★★ |
| Price | $240 |

Eagle Jigs
816-331-6093; eaglejigs.com

*continued on page 84*




# WOOD® Online Photo Galleries

## Share images of your woodworking projects with the world

**To see more images or post your own, visit**
**woodmagazine.com/projectgallery**

## The most popular pinners, voted best

Fine Woodworking  Molding  Trimming  Finishing  Intricate Assembly

### Grex P6 Series
### 23 Ga. Headless Pinners

Drive pins 3/8"~2"

GREX introduced the first pinners with an "adjust-free" magazine design - the defining feature of their line of pinners capable of driving pins from 3/8" up to 2". These are feature-packed industrial tools for those serious about their work.

| P650 | P645 | P635 | P630 |
|---|---|---|---|
| upto 2" | upto 1-3/4" | upto 1-3/8" | upto 1-3/16" |

*Changing ideas into solutions.*
Alhambra, CA • 888-4GREXCO • info@grexusa.com
Cheltenham, ON • 905-838-4887 • info@grexcanada.com
www.grexusa.com

GREX®

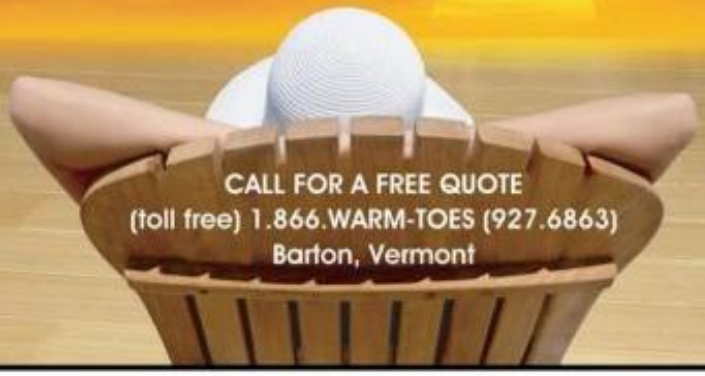
CMT® ITK PLUS™
The New Industrial Thin-Kerf Blade
- Silver Non-Stick PTFE Coating
- Precision Balanced to Run Truer
- Heavy Duty Laser Cut Plate - Thin and Strong
- Finest Industrial Quality Micrograin Carbide
- Laser Cut Sound Dampening Channels
- Laser Cut Heat Expansion Slots
- Tri-Metal Shock Resistant Brazing
- Super Thin-Kerf

VISIT LOWES.COM
AVAILABLE AT LOWE'S
Let's Build Something Together™
© C.M.T. UTENSILI S.P.A. TM: CMT, the CMT logo are trademarks of C.M.T. UTENSILI S.P.A. All rights reserved. Lowe's and the gable design are registered trademarks of LF, LLC.

Jim Heavey on DVD!
Learn firsthand from WOOD® Magazine's Master Craftsman

Only $19.95 each! Or all 5 DVDs for $74.95
Order online now at woodmagazine.com/JimHeavey
or call 888-636-4478
Please have your credit card information available.
SAVE $25

RADIANT
Floor Company
The Heat Wave That Saves
Our radiant floor heating systems are compatible with any fuel source:
GAS PROPANE SOLAR OIL WOOD ELECTRIC GEOTHERMAL
VISIT OUR WEBSITE
www.radiantcompany.com



CALL FOR A FREE QUOTE
(toll free) 1.866.WARM-TOES (927.6863)
Barton, Vermont

## Shop-Proven Products

### Believe it: A kick-free mitersaw that cuts cleanly

Makita's new 10" dual-compound sliding mitersaw provides the cut capacity for nested crown molding (6⅝") comparable to a 12" slider. But I like its soft-start motor most of all. Almost every mitersaw, slider or not, kicks like a startled mule when you power up and down. But not this one. Squeeze the trigger and the beveled-gear motor eases up to speed in about a second-and-a-half. Nice!

This saw also features two sets of sliding rails with three linear bearings per rail for increased rigidity and decreased side-to-side play, which results in greater cutting accuracy. I crosscut 12"-wide stock with the saw at 90° and just shy of 9" when set for a 45° miter. The saw rotates 52° to the left and 60° to the right, with nine miter detents that proved dead-on. The miter lock takes some getting used to because there's not only a finger-lift to bypass the detents, but also a push-and-twist lock. Six bevel stops prove helpful, but the bevel lock is on the rear of the saw and difficult to reach and use.

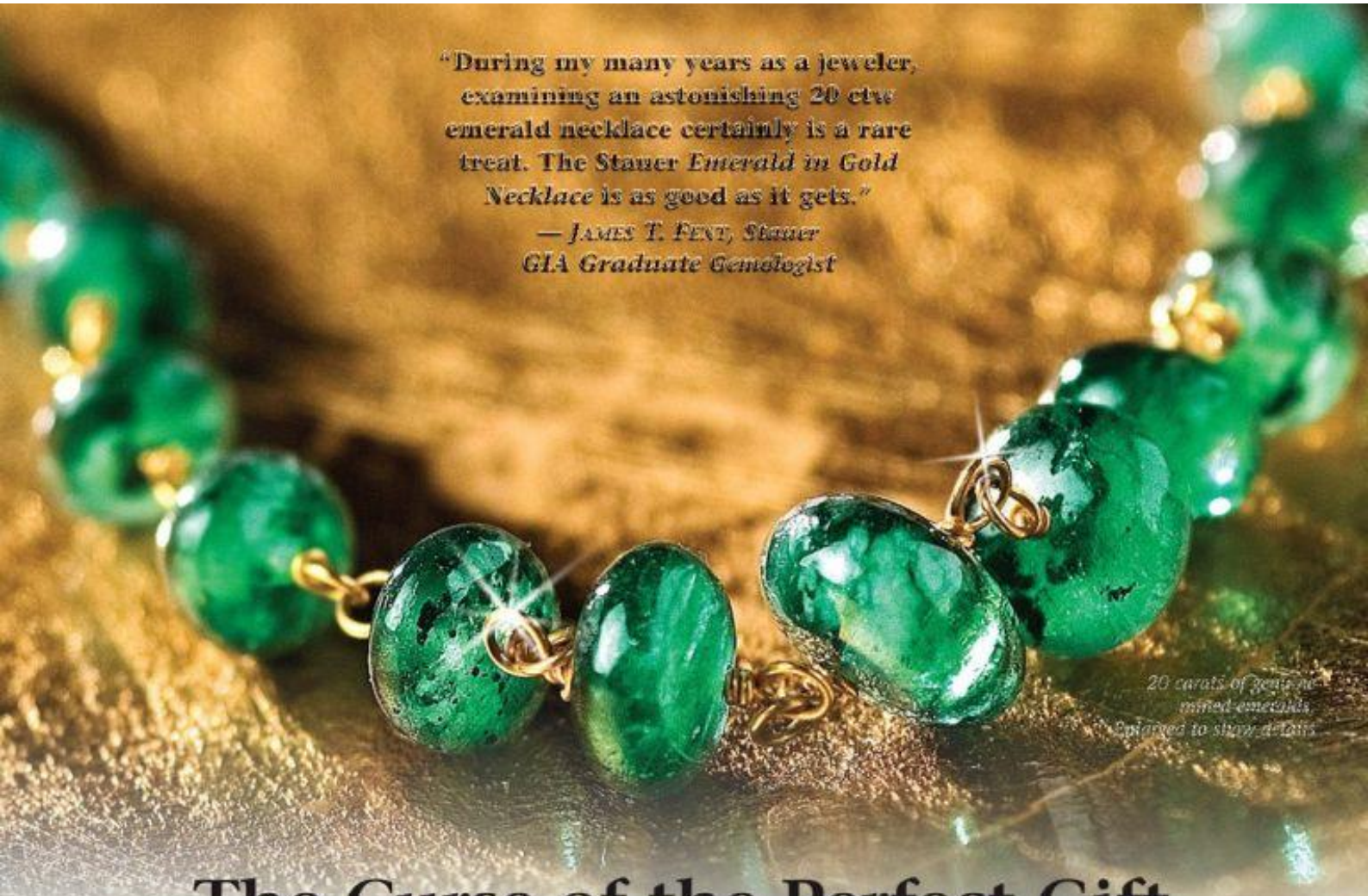
Lasers often prove meaningless, but this one needs no batteries, works great, and adjusts easily for spot-on cut placement. And you even get a 60-tooth blade that makes furniture-quality cuts, saving the price of buying a replacement blade.

*—Tested by Bob Hunter, Tools & Techniques Editor*

**10" Sliding Dual-Compound Mitersaw, #LS1016L**

| | |
|---|---|
| Performance | ★★★★★ |
| Price | $550 |

Makita
800-462-5482; makita.com


"During my many years as a jeweler, examining an astonishing 20 ctw emerald necklace certainly is a rare treat. The Stauer *Emerald in Gold Necklace* is as good as it gets."
— James T. Fent, Stauer
GIA Graduate Gemologist
20 carats of gem-quality mined emeralds, enlarged to show details

# The Curse of the Perfect Gift

## *20 carats of polished natural emeralds linked with 14K gold for under $200!*

It happened on our last trip to South America. After visiting the "Lost City" of Machu Picchu in Peru, we ventured through the mountains and down the Amazon into Brazil. In an old village we met a merchant with an impressive collection of spectacular, iridescent emeralds. Each gem was tumbled smooth and glistened like a perfect rain forest dew drop. But the price was so unbelievable, I was sure our interpreter had made a mistake.

But there was no mistake. And after returning home, I had 20 carats of these exquisite emeralds strung up in 14k gold and wrapped as a gift for my wife's birthday. That's when my trouble began. She loved it. Absolutely adored it. In fact, she rarely goes anywhere without the necklace and has basked in compliments from total strangers for months now.

**So what's the problem?** I'm never going to find an emerald deal this good again. In giving her such a perfect gift, I've made it impossible to top myself.

To make matters worse, my wife's become obsessed with emeralds. She can't stop sharing stories about how Cleopatra cherished the green gem above all others and how emeralds were worshiped by the Incas and Mayans and prized by Spanish conquistadors and Indian maharajahs. She's even buying into ancient beliefs that emeralds bring intelligence, well-being and good luck to anyone who wears them. I don't have the heart to tell her that I'm never going to find another deal this lucky.

*Complete your collection with the 5 ctw Emerald in 14K Gold Earrings.*

**Our elegant *Emeralds in 14K Gold Necklace* features 20 carats of smooth, round emerald beads,** hand-wired together with delicate 14K gold links. Each bead is unique in both size and color, ranging from transparent to translucent. The 18" necklace fastens with a spring ring clasp. If you are not thrilled at this rare find, send it back within 30 days for a full refund of the purchase price. But remember, we have only found enough emeralds to make a small limited number of necklaces and earrings at this low price.

JEWELRY SPECS:
- 20 ctw of polished natural emeralds
- Linked with 14K gold
- Necklace is 18" in length
- Earrings are 1 ½" in length
- Individual color may vary.

**Emeralds in 14K Gold Necklace**
(20 ctw) MSRP ~~$1,110~~
*Your price* $199 +s&h

**Emeralds in 14K Gold Earrings**
(5 ctw) MSRP ~~$820~~
*Your price* $175 +s&h

*Call now to take advantage of this limited offer.*

**1-800-333-2045**

**Promotional Code EGN268-01**
Please mention this code when you call.

Stauer
14101 Southcross Drive W.,
Dept. EGN268-01
Burnsville, Minnesota 55337
**www.stauer.com**

*Smart Luxuries—Surprising Prices*

# WOODWorkersCenter.com

## FREE Product Information from Advertisers in This Issue

**Looking for FREE product information? Fill out the coupon in this section to receive FREE product info and catalogs.**
**Or, for quicker service and instant access to information, visit us online at www.woodworkerscenter.com**

### Adhesives & Finishes

**TITEBOND® III ULTIMATE WOOD GLUE** Superior bond strength, waterproof, longer open-assembly time. The Best Wood Glue Ever! **Circle No. 24.**

**GORILLA WOOD GLUE** High strength, shorter clamp time, and no dyes for a natural finish. Try it today on your next building project. **Circle No. 50.**

### Bits, Blades, Cutting Tools

**CMT ORANGE TOOLS** Top quality industrial saw blades and router bits at affordable pricing. **Circle No. 180.**

**EAGLE AMERICA** Largest selection of professional quality, American-made router bits + 100's of unique accessories. **Circle No. 193.**

**FINAL CUT SAW BLADE** Only blade that cuts and sands at the same time. **Circle No. 194.**

**FORREST MFG. CO., INC.** Top quality blades and dados for an ultra smooth finish. **Circle No. 206.**

**FREUD SAW BLADES** This 48-page catalog illustrates the features and benefits for all Freud saw blades. **Circle No. 219.**

**FREUD ROUTER BITS** All Freud router bits are represented in this 84-page catalog, including more than 130 new bits and sets. **Circle No. 232.**

**MLCS WOODWORKING** Best quality, huge selection, low prices, superior service. Free Shipping! **Circle No. 245.**

**SAWSTOP** SawStop table saws stop the blade upon contact with skin. **Circle No. 280.**

**SOMMERFELD'S TOOLS FOR WOOD** Router Bits, Blades, Tools and Tips. FREE catalog & shipping! **Circle No. 284.**

**WOODLINE USA** Router tables, routers, router bits,clamps, saw blades and more. **Circle No. 310.**

### Books, Plans and Videos

**AMERICAN FURNITURE DESIGN CO.** 150 of America's best furniture plans, comprehensive instruction guide. Catalog. **Circle No. 336.**

**MEISEL HARDWARE SPECIALTIES CATALOG** 2,000+ full-size project plans and hard-to-find hardware. **Circle No. 401.**

**U-BILD WOODWORKING PLANS** Since 1948! Hundreds of full-size plans, downloadable plans, low prices. **Circle No. 435.**

### General Woodworking Catalogs

**ARMOR CRAFTS** Full-size plans to build cradles, rocking horses, clocks and more. Also hardware and wood craft supplies. **Circle No. 556.**

**THE BEALL TOOL COMPANY** Inventive solutions for shop problems: wood threading, buffing & more. **Circle No. 558.**

**GRIZZLY INDUSTRIAL, INC.** 12,000 woodworking and metalworking machines, tools and accessories — unbeatable prices! **Circle No. 583.**

**PEACHTREE WOODWORKING SUPPLY** "Your One Stop Supply Shop"—over 4,000 items. **Circle No. 654.**

**ROCKLER WOODWORKING & HARDWARE** Our premium tools make woodworking efficient and enjoyable. FREE Catalog. **Circle No. 661.**

**WOODCRAFT SUPPLY CORP.** Over 15,000 top quality woodworking tools, supplies, and accessories. **Circle No. 700.**

**WOODWORKERS HARDWARE.** Over 8,000 items stocked. Largest selection of cabinetmakers hardware. Lowest prices. **Circle No. 713.**

### Hand Tools, Jigs & Clamps

**MORTISE PAL** Mortises made easy! **Circle No. 824.**

**SOFT-SANDERS BY STYLE-LINE CORP. INTL.** Soft-Sanders conform to the shapes to be sanded. **Circle No. 833.**

### Hardwood & Lumber

**STEVE H. WALL LUMBER CO.** Quality hardwoods, plywood, exotic lumber. Ship UPS/motor freight, wholesale prices. **Circle No. 856.**

**WOODWORKERS SOURCE** Hardwoods from around the world. **Circle No. 869.**

### Income Opportunities & Education

**FURNITURE MEDIC** Offering franchise licenses to qualified individuals to perform mobile, on-site furniture repair & restoration services. **Circle No. 895.**

**MARC ADAMS SCHOOL OF WOODWORKING** Over 125 summer hands-on workshops with the best instructors of modern time. **Circle No. 916.**

**PROFURNITUREBUILDER.COM** ProFurnitureBuilder.com from Meadowbrook Creations. Start your own made-to-order furniture business. **Circle No. 919.**

**WOODCRAFT RETAIL FRANCHISE** Own a Woodcraft Store — franchises offered for stores across the country. **Circle No. 924.**

### Kits

**DETAILED PLAY SYSTEMS** Wooden swingsets and playground equipment for the backyard. Free catalog. **Circle No. 958.**

**KLOCKIT** The leading supplier of clock-making supplies for over 35 years! **Circle No. 973.**

**WOODEN-GEAR-CLOCKS.COM** Create a wooden gear clock—kits and plans available. **Circle No. 1008.**

### Lawn & Garden

**ZOYSIA FARMS NURSERIES** Amazoy Zoysia grass saves you time, work and money. **Circle No. 1017.**

### Miscellaneous

**APOLLO SPRAYERS TURBINE SYSTEMS** Quality control, engineering and durability. **Circle No. 1061.**

**AZTEC STEEL CORP.** Quality pre-engineered arch-style steel buildings at the lowest cost anywhere. **Circle No. 1064.**

**RADIANT FLOOR COMPANY** Radiant Heating Systems—design, manufacture and sale for the DIY. **Circle No. 1301.**

**ROCKAUTO.COM** Check out www.RockAuto.com for all the parts your car or truck will ever need. **Circle No. 1310.**

### Power Tools

**COOK'S SAW MFG., L.L.C.** Portable sawmills, Edgers, Sharpeners, Band Blades… Free catalog. Video available. **Circle No. 1480.**

**EPILOG** Wood engraving and cutting systems — Low Price, High-Quality Laser Systems. **Circle No. 1515.**

**FREUD POWER TOOLS** 16-page catalog illustrates dependable power tools with traditional Freud quality. **Circle No. 1532.**

**GREX POWER TOOLS** Professional fastening systems and pneumatic powered hand tools. **Circle No. 1573.**

**LAGUNA TOOLS** Fine woodworking machines for professionals and hobbyists. Award-winning design bandsaws, European quality machines with over 25 years of experience. **Circle No. 1593.**

**PLASMA CAM, INC.** Put metal into your wood projects! Free Demo Video! **Circle No. 1641.**



Request FREE product information today. Log on to www.WOODWorkersCenter.com

**WORK SHARP** Sharpen your woodworking tools with the new WORK SHARP. **Circle No. 1665.**

**RADARCARVE** Manufacturer of specialized wood carving duplicators. **Circle No. 1673.**

**SHOPBOT TOOLS INC.** Complete CNC systems for applications in wood, plastic and metal. **Circle No. 1714.**

**TOOLMART INC.** Woodworking tools and accessories by top brands: Delta, DeWalt, Porter Cable, Jet, Powermatic. **Circle No. 1770.**

**WOOD-MIZER PRODUCTS** Eight Portable Sawmills Available starting with the LT10 at $3995. **Circle No. 1805.**

**WOODMASTER TOOLS** Multi-duty planers that mold, sand & saw. **Circle No. 1820.**

## Project Parts & Materials

**OSBORNE WOOD PRODUCTS, INC.** A free catalog of table legs, corbels, and island legs. **Circle No. 1849.**

**OSBORNE WOOD PRODUCTS, INC.** WOOD CORBELS offer classic corbels in a broad range of styles. **Circle No. 1851.**

## Shop Accessories

**AMERICAN FABRIC FILTER CO., INC.** Manufacturers of custom-made filter bags for the wood industry. **Circle No. 1868.**

**CARTER PRODUCTS COMPANY, INC.** Bandsaw Guide kits, tires, stabilizer guides, and many other products. **Circle No. 1883.**

**THE JDS COMPANY** Specializing in the finest air filtration and dust collection equipment. **Circle No. 1974.**

**LIGNOMAT USA, LTD.** Affordable, reliable, pin and pinless moisture meters for wood. Free catalog. **Circle No. 2013.**

**ONEIDA AIR SYSTEMS, INC.** Free informative catalog contains dust collection systems and complete ductwork. **Circle No. 2039.**

**PENN STATE INDUSTRIES** Award-winning dust collection. Collectors, Cyclones, Ductwork and more. **Circle No. 2045.**

## Shop Supplies

**CLEANSTREAM PRO FILTERS** With CleanStream's HEPA filtration fine dust doesn't stand a chance. **Circle No. 2124.**

## Woodturning Supplies

**BEREA HARDWOODS** Quality pen kits and other turning kits. **Circle No. 2127.**

**HUT PRODUCTS** Woods, acrylics and supplies for pen and game call turning. **Circle No. 2133.**

**PACKARD WOODWORKS** Free Catalog for WOODTURNERS! — Quality Lathes, Tools and Supplies. **Circle No. 2143.**

**PENN STATE INDUSTRIES** Leading supplier of Turning Products. Pen kits, project, finishes and more. **Circle No. 2151.**


# Get the Garage You Want

Turn your garage from "dumping ground" to "find anything fast." It's simple, and we'll show you how.

On Newsstands February 16th

$6.99 U.S.
$8.99 Canada

Order online at **woodmagazine.com/publications**
or call toll free **888-636-4478**

WD0310



**WOODWorkersCenter.com**

## FREE Product Information

DEPT. WOMA10

CIRCLE THE NUMBERS BELOW CORRESPONDING TO ITEMS IN THIS ISSUE.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24 | 245 | 558 | 856 | 1008 | 1532 | 1805 | 2039 |
| 50 | 280 | 583 | 869 | 1017 | 1573 | 1820 | 2045 |
| 180 | 284 | 654 | 895 | 1061 | 1593 | 1849 | 2124 |
| 193 | 310 | 661 | 916 | 1064 | 1641 | 1851 | 2127 |
| 194 | 336 | 700 | 919 | 1301 | 1665 | 1868 | 2133 |
| 206 | 401 | 713 | 924 | 1310 | 1673 | 1883 | 2143 |
| 219 | 435 | 824 | 958 | 1480 | 1714 | 1974 | 2151 |
| 232 | 556 | 833 | 973 | 1515 | 1770 | 2013 | 4000 |

Discover how rewarding woodworking can be! Get one full year of WOOD® for just $28.00 (7 issues). Simply circle No. 4000. You will be billed later.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

E-MAIL ADDRESS _____

PHONE (OPTIONAL) _____

TO ENSURE PROMPT HANDLING OF YOUR ORDER, PLEASE:
- Circle Your Choice(s) in the box above
- Send card to WOOD® Magazine, Dept. WOMA10, P.O. Box 5135, Buffalo, NY 14205-5135
- Allow 4-6 weeks for delivery
- This card expires July 14, 2010

# Turn to Quality

Shop on-line @

www.hutproducts.com

1-800-547-5461

HUT Products



# Great Investment

*High Quality American Steel Span buildings make a great investment, perfect for a workshop, ideal for a garage.*

Maintenance-Free • Savings Up to 60%

www.steelspan.com

800-891-6733 ext 018



# Mortise Pal™

PRECISION MORTISING JIG

MORTISES MADE EASY!

WWW.MORTISEPAL.COM

RG Jig Co. Tel: 619-459-7951 Fax: 619-568-3511

4580 Alvarado Canyon Rd. Ste. E, San Diego, CA 92120



## SPINDLE ARM MORRIS NATIONAL AWARD WINNING DESIGN

Introducing the finest plan on the market today! This design has won awards across the country! Pages of directions and 36 by 48 CAD generated plan.

Plan #182

FREE CATALOG

*AMERICAN FURNITURE DESIGN*

P.O. BOX 300100 ESCONDIDO, CA 92030

SPINDLE ARM MORRIS PLAN $19.95 +$5.00 S&H

760 743-6923

www.americanfurnituredsgn.com



## TURN AND BURN WITH PACKARD WOODWORKS

*"Caballos Ascendentes"* Vessel turned & burned by Molly Winton

1-800-683-8876

PACKARDWOODWORKS.COM

Packard WOODWORKS INC.

The Woodturner's Source



LOGS TO LUMBER

# MAKE YOUR OWN LUMBER & SAVE MONEY

Eight Sawmill Models Available

©2009

Wood-Mizer

800.553.0182

www.SawBoards.com



**Compare: See how Final Cut**

**Cuts and Sands at the Same Time**

FINAL CUT

All in one step...Just cut, the sanding is a bonus

www.finalcutblade.com



## STEVE WALL LUMBER CO.

Quality Hardwoods and Woodworking machinery For The Craftsman and Educational Institutions

| | | | | | |
|---|---|---|---|---|---|
| Ash | 4/4 | Select | $ 2.60 | | $ 94.00 |
| Basswood | 4/4 | Select | $ 1.95 | | $ 80.00 |
| Birch | 4/4 | Select | $ 3.55 | | $ 108.00 |
| Butternut | 4/4 | 1C | $ 2.95 | | $ 88.00 |
| Cherry | 4/4 | Select | $ 4.90 | | $ 117.00 |
| Hickory - Pecan | 4/4 | Select | $ 3.00 | | $ 100.00 |
| Mahogany (Genuine) | 4/4 | Select | $ 4.70 | | $ 112.00 |
| Maple (Hard) | 4/4 | Select | $ 3.45 | | $ 108.00 |
| Maple (Soft) | 4/4 | Select | $ 2.50 | | $ 88.00 |
| Poplar | 4/4 | Select | $ 1.80 | | $ 78.00 |
| Red Oak | 4/4 | Select | $ 2.70 | | $ 96.00 |
| Walnut | 4/4 | Select | $ 4.90 | | $ 115.00 |
| White Oak | 4/4 | Select | $ 2.70 | | $ 96.00 |
| Cedar (Aromatic Red) | 4/4 | 1C+Btr. | $ 1.80 | | $ 78.00 |
| Cypress | 4/4 | Select | $ 2.60 | | $ 90.00 |
| White Pine | 4/4 | F.G. | $ 1.25 | | $ 70.00 |
| Yellow Pine | 4/4 | Clear | $ 2.30 | | $ 82.00 |

UPS Specials

SEE OUR CATALOG ON THE WEB!

Above prices are for 100' quantities of kilndried rough lumber sold by the Bd. Ft. FOB Mayodan, NC. Call for quantity discounts. Other sizes and grades available.

Above prices are 20 bd. ft. bundles of clear kilndried lumber 3"-10" wide •3'-5' long (Random widths & lengths) Surfaced 2 sides or rough. Delivered UPS prepaid in the Continental U.S.

OLIVER MACHINERY DEALER

HARDWOOD PLYWOOD

CUSTOM RAISED PANEL DOORS

CUSTOM PLANK HARDWOOD FLOORING

THIN CRAFTWOOD

EXOTIC LUMBER

**STEVE H. WALL LUMBER CO.**

BOX 287

MAYODAN, N.C. 27027

336-427-0637

1-800-633-4062

FAX 336-427-7588

Email: wood@walllumber.com

Website: www.walllumber.com

Send $1.00 For Lumber Catalog

Prices Subject to Change Without Notice

## Projects and Plans

Vendor Cart

Kit to build includes 2-24" **iron wheels** *that really work*, **axles** and step-by-step **plans**. Finished project measures 50"L x 25"W x 34"H. $76.80 plus S/H

**ByeGone Workshop**
**888-279-3941 8-5 M-F EST**
**www.byegone.com**

## Your Source for Wood

Lumber • Veneer • Turning Stock
Domestic & Exotic

800.423.2450

WOODWORKERS Source

Over 100 beautiful woods.
Secure online ordering.

www.101woods.com

## Your 4-Season Business

Build 30+ Products Proven to Sell
Get all you need to be successful

Marketing Know-how
40 Page Web Site
Catalogs
Brochures

0% Financing

Protected Territory

ProFurnitureBuilder.com

## INFINITY CUTTING TOOLS IMPROVED

Replacement HSS Knives
DEWALT DW735 PLANER

- Lasts Longer
- Thicker
- Stronger

Item: HSSK-041 **Only $79.90**

infinitytools.com | 877-USA-BITS

## Get Into Wood
**Sawing Lumber Made Easy!**

MP-32 Sawmill

Cut Wood For:
•Home •Barn •Fencing •Cabinets
•Stables •Decking and more...

5 Money Saving Package Deals!

FREE Catalog!

1-800-473-4804
www.cookssaw.com

## MOISTURE METER

mini-Ligno E/D:
- Accuracy
- Quality
- Durability
- 2-Year Warranty

Avoid frustrating problems loose joints delamination shrinking warping

MEMBER TESTED AND RECOMMENDED RANDYMAN

Lignomat USA LTD 800-227-2105
PO Box 30145, Portland, OR 97294
www.lignomat.com
E-mail: sales@lignomat.com

## WWW.RADARCARVE.NET
**Wood Carving Duplicators**

- Furniture
- Gunstocks
- Millwork
- Decoys
- Musical Instruments

Thousands of Uses 505-948-0571

WEEK LONG & WEEKEND WORKSHOPS RUNNING APRIL - OCTOBER
2010 CLASSES
• Cabinet Making • Carving
• Chair Making • Design
• Finishing • Furniture Making
• Joinery • Turning
• Veneering • Marquetry
• And Much More!
SCHOOL OF WOODWORKING
marc ADAMS
www.marcadams.com
5504 E 500 N • FRANKLIN, IN 46131
317-535-4013 • FAX 317-535-1713
marc@marcadams.com
Masters Programs & Scholarships Available

Soft-Sanders™

Sanding profiles just got easier!

706-354-6782

www.softsanders.com



Woodworking Plans!

Meisel Hardware Specialties
P.O. Box 70, Mound MN 55364

Make This Bear Wine Bottle Holder! Order Plan #W3392

FREE color catalog features plans for over 1,000 different projects. Mention Offer #1287

Call: 1-800-441-9870 Or visit our web site

www.meiselwoodhobby.com



TILTBOX®

Magnets on the sides cling to metal surfaces.

Reads relative angles to .1 degrees

THE BEALL TOOL CO.

541 Swans Road N.E. Newark Ohio Dept. WM

1-800-331-4718 www.beall tool.com



Can Your Old Dust Collector Work Better Than A New One?

Yes, with Optimized Filters from...

- Optimum Performance
- Low Maintenance
- Custom Designs
- Cleaner Air
- Longer Life
- Economical
- Best Size & Fit
- Proudly Made In USA

We Design & Fabricate Custom Filter Bags That REALLY WORK!

American Fabric Filter Co.

(800) 367-3591 americanfabricfilter.com



One Man Sawmill TURNS TIMBER INTO CASH

TIMBERKING

Dept. ZB07, 1431 N. Topping Ave., Kansas City, MO 64120

FREE Fact Kit

CALL TOLL FREE TODAY! 1-800-942-4406

www.timberking.com



Knifemaking Made Easy!

Cutlery Blades

Traditional style blades assist the woodworker in creating a set of knives to be appreciated for a generations to come!

Complete set includes 11 blades shown, rivets, Dymondwood and instructions:

SS801.....$74.95

Over 300 blades and kits available

Knife making kits, Exotic Woods, Horn, Pearl, Ivory, Abrasives, Finishing Supplies, Schrimshaw kits Leathercraft Supplies, Books, Videos, And More!

JANTZ SUPPLY

309 WEST MAIN • DAVIS OK 73030

Full Color Catalog ($5.00)

1-800-351-8900

www.knifemaking.com

SELF-FEEDING DR® CHIPPER!

Just load a DR® RAPID FEED™ CHIPPER, step back, and watch it chip branches up to 5 ½" thick!

SELF-FEEDING saves time and energy. Most branches can be dropped into the hopper and will self-feed, instead of you having to force-feed them.

POWERFUL ENGINES up to 18 HP.

PRO-SPEC™ CHIPPER KNIFE is made of forged alloy tool steel, making it exceptionally strong with an excellent edge-holding ability.

TRACTOR OWNERS! 3-Point Hitch, tractor-mounted models also available.

Get a FREE DVD & Catalog!

TOLL-FREE

888-213-2106

www.DRchipper.com



U-BILD.COM

On-line catalog pictures hundreds of full-size woodworking plans at low prices, plus more than 30 downloadable plans. Indoor, outdoor, kids and holiday projects for all skill levels.

(800) 82-U-BILD



Create A Classic

VISA/MC 1-800-292-8296

Armor Box 445 E. Northport NY 11731



Make Time!

Create your own wooden gear clock!

Need just the pattern? Or the complete kit? Build it YOUR way!

Wooden-Gear-Clocks.com

clocks, kits, and do-it-yourself patterns

(715) 955-4104

www.wooden-gear-clocks.com

VOL. CLVII....No. 30,000

The Stauer Times

"It's About Time"

*News Flash....*

# Government Gets Something Right

## Super Light Titanium Timepiece Loses Only One Second Every 20 Million Years.

**BOULDER, Colorado** The U.S. government has engineered the most ingenious, most accurate clock in the world: the F-1 U.S. Atomic Clock in Boulder, Colorado. Our extraordinary new Stauer Titanium Atomic Watch utilizes the transmissions directly from that remarkable cesium fission atomic clock to report the most precise time. This scientifically advanced timepiece will gain or lose only one second over a 20 million-year period. It is that accurate! This perfectly tuned technological invention with the super light strength of titanium is now available for UNDER $200.

**Super Light Titanium has two big advantages over steel.** One is corrosion resistance and the other is that titanium has the highest strength-to-weight ratio of any metal, which means that titanium is approximately 45% lighter than steel. But every other titanium watch that we can find is priced at over $400, and none of those are nearly as accurate as our atomic movement. Stauer has decided to bring these resources together in a timepiece that has the most accurate movement available today. You'll never have to set this watch. Just push one of the buttons and you are synchronized with the atomic clock in Colorado, and the hands of the watch move to the exact time position. The sleek black textured dial has luminous hands and markers plus the timepiece is water resistant to 3 ATM.

**A Titanium-clad offer.** This Titanium Atomic Watch exceeds the accuracy of any Swiss luxury automatic so you can be more punctual and keep most of your money in your wallet, not on your wrist. Look at your watch and we guarantee that the time is incorrect, unless you are wearing the advanced atomic technology. The Stauer Titanium Atomic Watch is not available in stores and it comes with our 30 day money-back guarantee. If you're not completely satisfied with the accuracy, simply return the watch for the full purchase price.

*Not Available in Stores*

**Stauer Titanium Atomic Watch ~~$195~~ now $145** +S&H

or **2 credit card payments of $72.50** +S&H

Call Toll-Free now to take advantage of this limited offer.

**1-888-201-7141**

*Promotional Code TTA322-04*
Please mention this code when you call.

Stauer
Heritage of Art & Science

14101 Southcross Drive W.,
Dept. TTA322-04
Burnsville, Minnesota 55337
www.stauer.com

# What's Ahead

A sneak peek inside the May 2010 issue (on sale March 23)

**FEATURED PROJECT**

### Durable, Doable Outdoor Bench

Build this garden seating in less than a weekend using just simple skills and basic tools. In the process you'll learn how to quickly cut the handful of joints using only a circular saw.

### Big-time Storage for CDs and DVDs

Keep 'em organized in style; our shop-proven layout method ensures a perfect fit for every drawer.

### Floating Wall Shelves

Give your collectibles an easy-to-make display space in two attractive styles.

### Discover a New Level of Precision

Improve your woodworking results overnight by putting down your pencil and grabbing a marking knife.

### 3-hp Cabinet Tablesaws with Riving Knives

The newest saws on today's market come with riving knives—with good reason. We test nine of them.

*Better Homes and Gardens* WOOD® magazine (ISSN-0743-894X) is published seven times a year in March, May, July, September, October, November, and December/January by Meredith Corporation, 1716 Locust St., Des Moines, IA 50309-3023. Periodicals postage paid at Des Moines, Iowa, and additional mailing offices. Better Homes and Gardens trademark registered in Canada and Australia. Marca Registrada en México. One-year subscription prices: U.S. and its possessions, $28; Canada, $41; other countries, $48. Canada Post Publications Mail Sales Product Agreement No. 40069223. Canadian BN 12348 2887 RT. Return undeliverable Canadian addresses to: Better Homes and Gardens WOOD magazine, PO Box, 882 STN Main, Markham, ON L3P 8Z8. POSTMASTER: Send address changes to Better Homes and Gardens WOOD magazine, P.O. Box 37439, Boone, IA 50037-0439.

Make Money In Metal Art
The PlasmaCAM machine makes it easy for you to cut intricate metal shapes that really enhance your wood projects. Call today for your FREE demo video to see what you can do with this amazing machine!
"We used to cut everything by hand and had a lot of trouble. Now our PlasmaCAM does it all, attaining levels of production not thought possible before. It's run 40-50 hours a week for the past three years. It attains incredible detail, is very easy and cost efficient to operate, and requires little maintenance. The bottom line is: this machine makes me money!"
-Jon, Restaurant Lighting & Fixtures
Ask about our exclusive Art Discs with ready-to-cut artwork!
(719) 676-2700 • www.plasmacam.com
PO Box 19818 • Colorado City, CO 81019
PlasmaCAM

# The facts are hard to ignore.

## Titebond® III outperforms polyurethane glues.

As the leader in wood glues, we want you to know the truth about polyurethane glue and woodworking. A straightforward comparison between Titebond® III Ultimate Wood Glue and polyurethane glue tells the story.

Titebond® III is THE ultimate choice for bonding wood to wood. Period.

WOOD MAGAZINE TOP GLUE APPROVED

For more information and a detailed comparison, please visit www.titebond.com/TBIIIvsPolyurethane

Made in the USA